

S. 280.

3





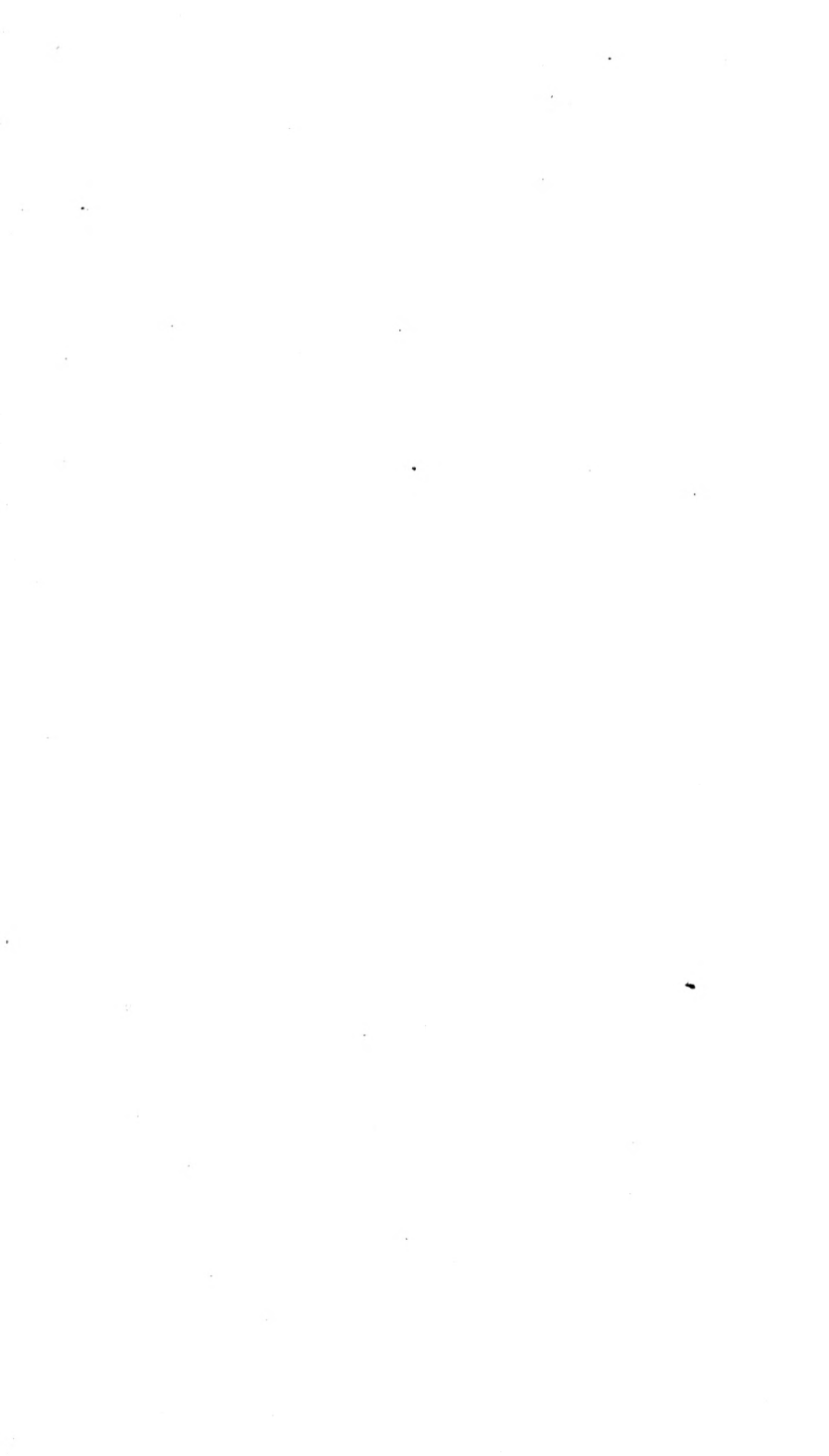




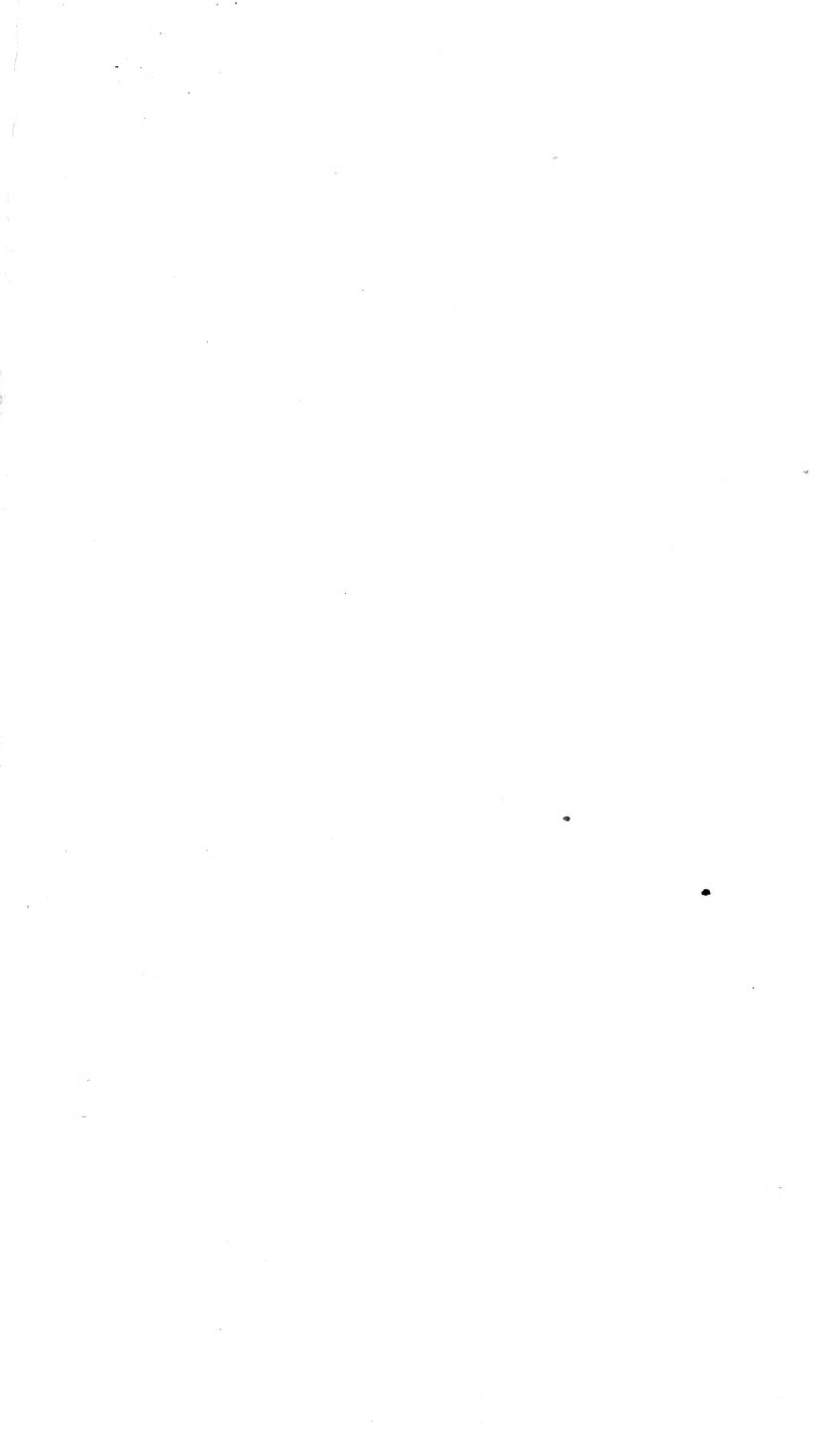












2001. Journ.

III.	kt.	9	pubd.	Jan. 1827	
		10	—	Sept. 1827	←
		11	—	Dec. 31, 1827	←
		12	—	Apr. 1828	

LOS.

THE  
ZOOLOGICAL  
JOURNAL.

---

VOL. III.

---

FROM JANUARY, 1827, TO APRIL, 1828.

---

*X rel*  
EDITED BY

N. A. VIGORS, Esq., A.M., F.R., L., & G.S.

*Secretary of the Zoological Society :*

WITH THE CO-OPERATION OF

THOMAS BELL, Esq., F.R. & L.S.

E. T. BENNETT, Esq., F.L.S.

J. E. BICHENO, Esq., F.R.S., Sec. L.S.

W. J. BRODERIP, Esq., F.R.S.,

Sec. G.S.

J. G. CHILDREN, Esq., F.R.S. L. & E.

Major-Gen. THOS. HARDWICKE,  
F.R. & L.S.

T. HORSFIELD, M.D., F.R. & L.S.

Rev. W. KIRBY, A.M., F.R. & L.S.

J. de CARLE SOWERBY, Esq.,  
F.L.S.

W. YARRELL, Esq., F.L.S.



---

London :

PRINTED AND PUBLISHED BY W. PHILLIPS, GEORGE YARD, LOMBARD STREET;

SOLD ALSO BY G. B. SOWERBY, 156, REGENT STREET;

W. & C. TAIT, EDINBURGH;

AND A. A. ROYER, AU JARDIN DES PLANTES A PARIS.

---

1828.

53  
3-11  
3

## CONTRIBUTORS TO THE THIRD VOLUME OF THE ZOOLOGICAL JOURNAL.

---

- THOMAS BELL, ESQ., F.R.S., F.L.S., &c.  
E. T. BENNETT, ESQ., F.L.S., &c.  
REV. M. J. BERKELEY.  
CHARLES LUCIAN BONAPARTE, PRINCE OF MUSIGNANO,  
FOR. MEMB. L.S., &c.  
G. W. BRACKENRIDGE, ESQ.  
E. W. BRAYLEY, JUN. A.L.S.  
W. J. BRODERIP, ESQ., SEC. G.S., F.R.S., F.L.S., &c.  
J. G. CHILDREN, ESQ., F.R.S., L.&E., F.L.S., &c.  
W. CLARK, ESQ.  
J. CURTIS, ESQ., F.L.S., &c.  
H. T. DE LA BECHE, ESQ., F.R.S., F.L.S., &c.  
L. W. DILLWYN, ESQ., F.R.S., F.L.S., &c.  
W. H. FITTON, M.D., PRES. G.S., F.R.S., F.L.S., &c.  
G. T. FOX, F.L.S., &c.  
J. FREMBLY, ESQ., R.N.  
JOHN EDWARD GRAY, ESQ., F.G.S., &c.  
REV. L. GUILDING, B.A., F.L.S., F.G.S., &c.  
A. H. HALIDAY, ESQ.  
MAJOR GENERAL HARDWICKE, F.R.S., F.L.S., &c.  
THOMAS HORSFIELD, M.D., F.R.S., F.L.S., &c.  
G. JOHNSTON, M.D.  
CAPT. P. P. KING, R.N., F.R.S., F.L.S., &c.  
REV. W. KIRBY, A.M., F.R.S., F.L.S., &c.

M. A. LEFEBVRE, MEMBRE DE LA SOC. LINNEENE DE  
PARIS, &c.

REV. R. T. LOWE.

J. RICHARDSON, M.D., F.R.S., F.L.S., &c.

G. B. SOWERBY, F.L.S., &c.

J. F. STEPHENS, ESQ., F.L.S. &c.

W. SWAINSON, ESQ., F.R.S., F.L.S., &c.

DR. TURTON.

N. A. VIGORS, ESQ., A.M., F.R.S., F.L.S., &c.; SEC. ZOOL.  
SOC.

J. O. WESTWOOD, ESQ., F.L.S.

W. YARRELL, ESQ., F.L.S.



# CONTENTS.

No. IX.—*January*, 1827.

	Page
ART. I. <i>Some account of the Life and Writings, and Contributions to Science, of the late SIR T. STAMFORD RAFFLES, Knt. F.R.S. S.A. &amp;c.; successively Lieutenant-Governor of Java and its dependencies, and of Fort Marlborough, Singapore, and the British Possession in Sumatra: Founder and President of the Zoological Society. By E. W. BRAYLEY, Jun. A.L.S. &amp; M. Zool. Soc. ....</i>	1
ART. II. <i>Supplement to the Genera of North American Birds, and to the Synopsis of the Species found within the territory of the United States. By CHARLES LUCIAN BUONAPARTE, Prince of Musignano, M. A.; Vice-President of the Maclurean Lyceum of Philadelphia; Mem. of the Phil. Soc. of Phil.; of the Phil. Soc. of the State of New Jersey; of the Ac. of Nat. Hist. of Phil.; of the Lyceum of Nat. Hist. of New York; of the Ac. of Arts &amp; Sc. of Baltimore; of the Ac. of the Ardeni, &amp;c. &amp;c. ....</i>	49
ART. III. <i>On the Esquimaux Dog. By J. G. CHILDREN, Esq. Sec. R.S. L. F.R.S. E., F.L.S. &amp;c. ....</i>	54
ART. IV. <i>Observations upon Siagonium quadricorne of Kirby, and on other portions of the Brachelytra (Staphylinus, Lin.) By Mr. J. O. WESTWOOD.....</i>	56
ART. V. <i>Observations on the Shells of an Acephalous Molluscum of the Family of Pectinidæ, for which the Generic name of Hinnites has been proposed by M. DeFrance; together with the character of several Species. By G. B. SOWERBY, F.L.S., &amp;c. ....</i>	67
ART. VI. <i>Sketch of the Life and Character of the late Count de Lacépède. By WILLIAM SWAINSON, Esq. F.R.S., &amp;c. ....</i>	73

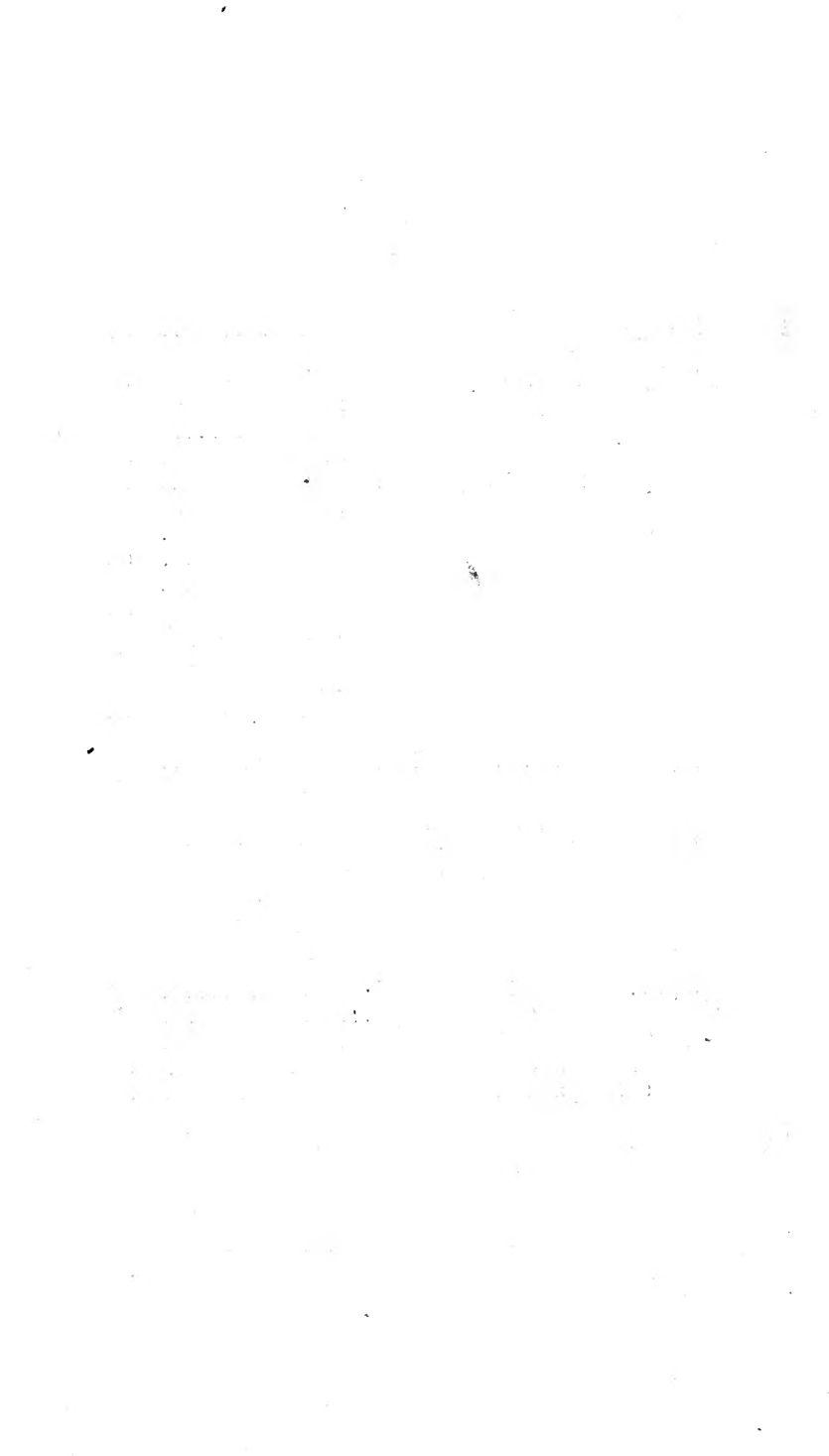
CONTENTS.

	Page
ART. VII. <i>On Balanus punctatus, Puncturella Flemingii, &amp;c.; together with some corrections relative to Turbo carneus, and some of the Chitones before described.</i> By the Rev. R. T. Lowe . . . . .	76
ART. VIII. <i>Description of some new and rare Shells.</i> By W. J. BRODERIP, Esq. Sec. G.S., F.L., & H.S. . . . .	81
ART. IX. <i>On the occurrence of some rare British Birds.</i> By WILLIAM YARRELL, Esq. F.L.S. . . . .	85
ART. X. <i>Supplement to "an Account of four Species of Stormy Petrel," (Thalassidroma, Vigors).</i> By C. L. BUONAPARTE, Prince of Musignano, &c. &c. . . . .	89
ART. XI. <i>A Reply to some Observations in the "Dictionnaire des Sciences Naturelles," upon the newly characterized groups of the Psittucidæ.</i> By N. A. VIGORS, Esq. M.A., F.R.S., and L.S., &c. . . . .	91
ART. XII. <i>Analytical Notices of Books:</i>	
<i>An Introduction to Entomology: or Elements of the Natural History of Insects.</i> By WILLIAM KIRBY, M.A. F.R. & LS. and WILLIAM SPENCE, Esq. F.L.S. Vols. iii. and iv. . . . .	124
<i>The Genera of Recent and Fossil Shells.</i> By G. B. SOWERBY, F.L.S. With original Plates, &c. by J. de C. SOWERBY, F.L.S. No. xxviii. . . . .	133
<i>Narrative of a Survey of the Intertropical and Western Coasts of Australia, performed between the years 1818 and 1822, By Capt. PHILIP P. KING, R.N. F.R.S. F.L.S. &amp;c. With an Appendix, containing various Subjects relating to Hydrography and Natural History.</i> 2 vols. 8vo. plates. . . . .	135
<i>British Entomology; or Illustrations and Descriptions of the Genera of Insects found in Great Britain and Ireland.</i> By JOHN CURTIS, F.L.S. Nos. xxii—xxiv. . . . .	139
<i>Histoire Naturelle des Mammifères, avec des Figures originales dessinées d'après des Animaux vivans; &amp;c. Par MM. GEOFFROY SAINT-HILAIRE et F. CUVIER. Livraisons 52de et 53ieme.</i> . . . . .	140
ART. XIII. <i>Proceedings of Learned Societies on Subjects connected with Zoology — Zoological Society . . . . .</i>	143

## EXPLANATION OF PLATES.

---

	PAGE
PLATE I. Esquimaux Dog.....	54
PLATE II. <i>Fig. 1.</i> Siagonium quadricorne, A. Larva aucta ..	58
B. Tubus caudalis &c.....	<i>ib.</i>
C. Pes anterior...	<i>ib.</i>
<i>Fig. 2.</i> Philonthus politus... A. Larva aucta...	<i>ib.</i>
B. Tubus caudalis &c. ....	59
C. Pes .....	<i>ib.</i>
D. Antennæ.....	<i>ib.</i>
E. Portio capitis	<i>ib.</i>
F. Maxilla & pal- pus maxillaris	<i>ib.</i>
G. Mentum, Labrum, & palpus labialis	<i>ib.</i>
<i>Fig. 3.</i> Aleochara fuscipes .....	A. Larva aucta ..
B. Tubus caudalis	<i>ib.</i>
C. Antenna aucta	<i>ib.</i>
<i>Fig. 4.</i> A.B. Bledius Stephensii .....	61
A.A. Thorax ....	62
B.B. Caput absque antennis	61
C. Bledii armati Thorax .....	62
<i>Fig. 5.</i> Generis Elonii (Leach.) Maxilla.....	64
6. Generis Omalii Maxilla .....	<i>ib.</i>
7. Oxyteli carinati Maxilla .....	<i>ib.</i>
8. Siagonii quadricornis Maxilla .....	<i>ib.</i>
9. Zirophori fronticornis Maxilla .....	<i>ib.</i>
PLATE III. <i>Fig. 1.</i> Volutia dubia .....	81
<i>Fig. 2.</i> Voluta multi-costata.....	82
<i>Fig. 3.</i> Voluta lyriformis .....	83
PLATE IV. <i>Fig. 1.</i> Cypræa nivosa .....	84
<i>Fig. 2.</i> Cypræa rugosa.....	85



# CONTENTS.

No. X.—April—September, 1827.

	Page
ART. XIV. <i>A Description of some new Genera and Species of Petalocerous Coleoptera. By the Rev. WM. KIRBY, A.M., F.R.S., F.L.S., &amp;c.</i> .....	145
ART. XV. <i>On several Groups and Forms in Ornithology, not hitherto defined. By WILLIAM SWAINSON, Esq. F.R.S., F.L.S., &amp;c.</i> .....	158
ART. XVI. <i>Contributions to the British Fauna. By GEORGE JOHNSTON, M.D., Fellow of the Royal College of Surgeons of Edinburgh</i> .....	175
ART. XVII. <i>Some Observations on the Anatomy of the British Birds of Prey. By WILLIAM YARRELL, Esq. F.L.S.</i> .....	181
ART. XVIII. <i>On the Genus Lacuna. By Dr. TURTON.</i>	190
ART. XIX. <i>A Description of several new Species of Chitones, found on the Coast of Chili in 1825; with a few remarks on the method of taking and preserving them. By JOHN FREMBLY, R.N., Corresp. Memb. Zool. Soc.</i> .....	193
ART. XX. <i>Description de cinq espèces de Lépidoptères Nocturnes, des Indes Orientales. Par M. ALEX. LEFEBVRE, Membre de la Société Linnéenne de Paris, Correspondant de l'Académie de Catane, &amp;c.</i> .....	205
ART. XXI. <i>Notice of a nondescript Species of Grouse, from North America. By CHARLES LUCIAN BONAPARTE, Prince of Musignano, M. A.; Fell. Lync. Acad. Rome, For. Memb. Linn. Soc. Lond., Corresp. Memb. Senk. Nat. Hist. Soc. Franc., &amp;c.</i> .....	212
ART. XXII. <i>A Synopsis of the Species of Saurian Reptiles, collected in India by Major-General Hardwicke; By Major-General HARDWICKE, F.R. &amp; L.S., and J. E. GRAY, F.G.S.</i> .....	213

CONTENTS.

	Page
ART. XXIII. <i>A short account of a new species of Modiola, and of the animal inhabitants of two British Serpulæ. By the Rev. M. J. BERKELEY.</i> .....	229
ART. XXIV. <i>On the Bos Gour of India. By Major-Gen. T. HARDWICKE, F.R. &amp; L.S., &amp;c.</i> .....	231
ART. XXV. <i>Description of a Fossil Volute from St. Peter's Mountain, near Maestricht. By. W. J. BRODERIP, Esq., Sec. G.S., F.L.S., &amp;c.</i> .....	234
ART. XXVI. <i>Descriptions of a new Species of Anolius, and a new Species of Amphispæna; collected by W. S. MacLeay, Esq. in the Island of Cuba. By THOMAS BELL, Esq. F.L.S., F.G.S., &amp;c.</i> .....	235
ART. XXVII. <i>Notice of two Species of Vespertilionidæ, forwarded by W. S. MacLeay, Esq. F.L.S., His Majesty's Commissioner of Arbitration at the Havana, &amp;c. &amp;c.; in a Letter to the Editor of the Zoological Journal. By THOS. HORSFIELD, M.D., F.L.S., &amp;c. &amp;c.</i> .....	236
ART. XXVIII. <i>Sketches in Ornithology, &amp;c. &amp;c. By N. A. VIGORS, Esq. M.A., F.R.S. and L.S., Secretary of the Zoological Society, &amp;c.</i> .....	240
ART. XXIX. <i>Notice of a new genus of Mammalia, found in Sumatra by Sir T. Stamford Raffles. By THOMAS HORSFIELD, M.D., F.L.S., &amp;c., and N. A. VIGORS, Esq., M.A., F.R.S. and L.S., &amp;c.</i> .....	246
ART. XXX. <i>Analytical Notices of Books:</i>	
<i>Nova Acta Physico-Medica Academiæ Cæsareæ Leopoldino-Carolinæ Naturæ Curiosorum. Tom. xii. pars 2. 4to. Bonnæ. 1825.</i> .....	249
<i>Journal of the Academy of Sciences of Philadelphia, 8vo. Vol. iv. Part ii. Nos. ii. &amp; iii.</i> .....	260
<i>Voyage autour du Monde, fait par ordre du Roi, sur les Corvettes l'Uranie et la Physicienne, pendant les Années 1817, 1818, 1819, et 1820, par M. Louis de Freycinet, Capit. de Vaisseau, &amp;c. Partie Zoologique; par MM. Quoy et Gaimard, Médecins de l'Expédition. Livraisons i.—xii. 4to. Planches coloriées lxxviii. Folio.</i>	266

CONTENTS.

	Page
<i>The Transactions of the Linnean Society of London. Vol. xv. Part i.—4to. p. 334.—Plates ii. . . .</i>	275
<i>Memoir on the Pentacrinus Europæus: a recent species discovered in the Cove of Cork, July 1, 1823. With two illustrative Plates. By JOHN V. THOMPSON, Esq., F.L.S. 4to. p. 12. . . . .</i>	281
<i>Mineral Conchology of Great Britain; or coloured Descriptions of those Remains of Testaceous Animals or Shells, &amp;c. By J. SOWERBY. Continued by J. D. SOWERBY, F.L.S., &amp;c. — Nos. lxxxiv—xcvi. . . . .</i>	282
<i>The Genera of Recent and Fossil Shells: by G. B. SOWERBY, F.L.S., with original Plates by J. D. C. SOWERBY, F.L.S. No. xxix. . . . .</i>	284
<i>British Entomology; or Illustrations and Descriptions of the Genera of Insects found in Great Britain and Ireland.—By JOHN CURTIS, F.L.S. Nos. xxv—xxvi. (Vol. iii.). . . . .</i>	285
ART. XXXI. <i>Proceedings of Learned Societies on Subjects connected with Zoology.</i>	
<i>Royal Society . . . . .</i>	287
<i>Linnean Society . . . . .</i>	293
<i>Zoological Club of the Linnean Society . . . . .</i>	298
<i>Geological Society . . . . .</i>	303
<i>Zoological Society . . . . .</i>	308
<i>French Academy of Sciences of Arts . . . . .</i>	310
ART. XXXII. <i>Scientific Notices:</i>	
<i>Royal Cabinet of Insects at Berlin . . . . .</i>	312
<i>Remarks on Cyprææ, described by Mr. Gray. By L. W. DILLWYN, Esq. F.R. &amp; L.S. . . . .</i>	315
<i>Nature of Vision in the invertebrate animals . . . . .</i>	317
<i>Yearly appearance of the Swallow and Cuckow . . . . .</i>	319

## EXPLANATION OF PLATES.

---

		PAGE
<b>PLATE V.</b>	<i>Fig. 1.</i> <i>Cnemida Francilloni</i> .....	147
	<i>Fig. 2.</i> <i>Sparshalli</i> .....	148
	<i>Fig. 3.</i> <i>Cremastocheilus Harrisii</i> .....	152
	<i>d.</i> <i>Cremastocheili Harrisii prothorax</i> ....	<i>ib.</i>
	<i>Fig. 4.</i> <i>Cremastocheilus variolosus</i> .....	<i>ib.</i>
	<i>b.</i> <i>Cremastocheili variolosi prothorax</i> ....	<i>ib.</i>
	<i>Fig. 5.</i> <i>Cremastocheilus canaliculatus</i> .....	151
	<i>c.</i> <i>Cremastocheili canaliculati prothorax</i> ..	152
	<i>d.</i> <i>Cremastocheili canaliculati tuberculum</i> <i>spiraculiferum abdominis</i> .....	<i>ib.</i>
	<i>Fig. 6.</i> <i>Cymophorus undatus</i> .....	154
<i>Fig. 7.</i> <i>Trichius Bigsbii</i> .....	155	
<b>PLATE VI.</b>	<i>Fig. 1.</i> Breast bone of the Peregrine Falcon.. <i>a,</i> the sternum, <i>b,</i> the keel, <i>c,</i> the furcula, <i>d,d,</i> the clavicles, <i>e,</i> scapula broken off.	
	<i>Fig. 2.</i> Breast bone of a Wood Owl.	
	3. Bony ring of a Golden Eagle.	
	4. Crystalline lens of the same bird ; <i>a,</i> the anterior surface, somewhat less convex than the posterior one.	
	5. Bony ring of a Snowy Owl.	
	6. Crystalline lens of the same bird ; <i>a,</i> the anterior surface, also less convex.	
<b>PLATE VII.</b>	<i>Fig. 1.</i> <i>Bos Gayæns</i> .....	233
	2. <i>Gour</i> .....	232
<b>PLATE VIII.</b>	<i>Gymnura Rafflesii</i> .....	248



# CONTENTS.

---

No. XI.—September—December 31, 1827.

---

	Page
ART. XXXIII. <i>Contributions to the British Fauna. By GEORGE JOHNSTON, M.D., Fellow of the Royal College of Surgeons of Edinburgh</i> .....	321
ART. XXXIV. <i>Observations on the Animals of some species of Bullæa, Lam.; and on some species of the Annelida. By WILLIAM CLARK, Esq.</i> .....	337
ART. XXXV. <i>On several Groups and Forms in Ornithology, not hitherto defined. By WILLIAM SWAINSON, Esq., F.R.S., F.L.S., &amp;c.</i> .....	343
ART. XXXVI. <i>Monograph on the Cypræidæ, a Family of Testaceous Mollusca. By JOHN EDWARD GRAY, Esq., F.G.S.</i> .....	363
ART. XXXVII. <i>Observations on the Fishes contained in the Collection of the Zoological Society. By E. T. BENNETT, Esq., F.L.S., &amp;c.</i> .....	371
ART. XXXVIII. <i>An Account of Elater Noctilucus, the Fire-fly of the West Indies. By JOHN CURTIS, Esq., F.L.S., &amp;c.</i> .....	379
ART. XXXIX. <i>Some Account of the Life and Writings and Contributions to Science, of the late Sir THOMAS STAMFORD RAFFLES, Knt., F.R.S., S. A. &amp; L.S. &amp;c.; successively Lieut.-Governor of Java and its Dependencies, and of Fort Marlborough, Singapore, and the British Possessions in Sumatra: Founder and President of the Zoological Society. By E. W. BRAYLEY, Junr., A.L.S. &amp; M. Zool. Soc.</i> .....	382
ART. XL. <i>Observations on the Osteology of the Fennec. By WILLIAM YARRELL, Esq., F.L.S., &amp;c.</i> .....	401

CONTENTS.

	Page
ART. XLI. <i>Observations on the Zoology of the Caribwan Islands. By the Rev. LANSDOWN GUILDING, B.A., F.L. &amp; G.S., M.W.S., &amp;c.</i> .....	403
ART. XLII. <i>Observations on the Jaw of a Fossil Mammiferous animal, found in the Stonesfield Slate. By W. J. BRODERIP, Esq., Sec. G.S., F.L.S., &amp;c.</i> .....	408
ART. XLIII. <i>On the Strata from whence the Fossil described in the preceding Notice was obtained. By W. H. FITTON, M.D., F.R.S., Pres. G.S.</i> .....	412
ART. XLIV. <i>Descriptions of three new Species of Land Tortoises; by THOMAS BELL, F.L.S., F.G.S.</i> .....	419
ART. XLV. <i>Extracts from a Letter addressed by Capt. PHILIP PARKER KING, R.N., F.R.S., &amp; L.S., to N. A. VIGORS, Esq., on the Animals of the Straits of Magellan.</i> .....	422
ART. XLVI. <i>Sketches in Ornithology, &amp;c. &amp;c. By N. A. VIGORS, Esq. M.A., F.R.S. and L.S., Secretary of the Zoological Society, &amp;c.</i> .....	432
ART. XLVII. <i>Descriptions of two Species of the genus Felis, in the collection of the Zoological Society. By N. A. VIGORS, Esq., A.M., F.R.S., &amp;c. and THOS. HORSFIELD, M.D., F.L.S., &amp;c.</i> .....	449
ART. XLVIII. <i>Analytical Notices of Books:</i>	
<i>Narrative of Travels and Discoveries in Northern and Central Africa, in the Years 1822, 1823, and 1824. By Major DENHAM, Capt. CLAPPERTON, and the late Dr. OUDNEY. 4to.</i> .....	452
<i>Monographies de Mammalogie: par C. J. TEMMINCK. Livraisons 5—7. 4to.</i> .....	455
<i>Manuel de Mammalogie, ou Histoire Naturelle des Mammifères; par R. P. Lesson. 12mo. pp. 442. Paris, 1827.</i> .....	464
<i>Atlas de Mammalogie; Planches lxxx. Paris, 1827.</i> .....	465
<i>Systema Avium. Auctor Dr. JOANNES WAGLER. Pars Prima. Sm. 8vo. pp. 412. Stuttgartiae et Tubingiae. 1827.</i> .....	465

CONTENTS.

	Page
<i>American Ornithology ; or the Natural History of Birds inhabiting the United States, not given by Wilson. With Figures drawn, engraved, and coloured from Nature. By CHARLES LUCIAN BONAPARTE. Vol. i. Folio, pp. 106. pl. ix. Philadelphia. 1825. ....</i>	467
<i>Observations on the Nomenclature of Wilson's Ornithology. By CHARLES LUCIAN BONAPARTE. 8vo. pp. 252. Philadelphia. 1826. ....</i>	467
<i>Atlas des Oiseaux d'Europe, pour servir de complément au Manuel d'Ornithologie de M. Temminck : par J. C. WERNER, Peintre d'Histoire Naturelle. 8vo. Livraisons i—v. Paris, 1826. ....</i>	468
<i>Birds of America, from Drawings made during a residence of twenty-five years in the United States and its Territories : by J. J. AUDUBON. No. 1... ..</i>	469
<i>Illustrations of Ornithology : by SIR WILLIAM JARDINE, Bart., F.R.S., &amp;c.; and P. J. SELBY, Esq., F.L.S., &amp;c. Parts i. and ii. Royal 4to. Plates. ....</i>	469
<i>Illustrations of British Ornithology : by P. J. SELBY, Esq., F.L.S., &amp;c.—Water Birds. Nos. ii. &amp; iii. Folio.....</i>	469
<i>Ornithologia ; or the Birds. A Poem. By J. JENNINGS. 12mo. London, 1827. ....</i>	470
<i>Illustrations of British Entomology ; or a Synopsis of Indigenous Insects : by J. F. STEPHENS, Esq., F.L.S., &amp;c. Nos. i—viii. With Plates. 8vo. London, 1827. ....</i>	470
<i>Die Schmetterlinge von Europa. (Fortsetzung des Ochsenheimer'schen Werks,) von FRIEDRICH TREITSCHKE. Funfter Band. Erste und Zweyte Abtheilunge. 8vo. pp. 414, und 447. 1825. ....</i>	472
<i>Histoire Naturelle des Lépidoptères ou Papillons de France ; par M. J. B. GODART. Continué par M. P. A. J. DUPONCHEL. Tome vii. 1ere. partie. 8vo. Planches. ....</i>	472

	Page
<i>Systematische Beschreibung der bekannten Europäischen Zweiflügeligen Insekten: von J. W. MEIGEN. Funfter Theil. 8vo. pp. 412. Plates xiii. Hamm, 1826. ....</i>	473
<i>Insecta Suecica descripta à LEONARDO GYLLENHAL. Classis 1. Coleoptera sive Eleuterata. Tomi i. Pars iv. Lipsiæ 1827. 8vo. pp. 761....</i>	473
<i>Catalog meiner Insecten-Sammlung, von Jacob Sturm. Erster Theil. Käfer. Nürnberg, 1826. 8vo. pp. 207. pl. iv.. ....</i>	474
<i>The Honey-Bee; its Natural History, Physiology, and Management: by EDWARD BEVAN, M.D. 12mo. pp. xxviii. and 404. London, 1827...</i>	474
<i>Histoire Naturelle des principales Productions de l'Europe Méridionale, et particulièrement de celles des Environs de Nice et des Alpes Maritimes; par A. Risso, Ancien Professeur, &amp;c. 8vo. Tomes i.—iv. Avec des Planches. Paris, 1826. ....</i>	475
<i>Catalogue Descriptif et Méthodique des Anne- lides et des Mollusques de l'Île de Corse; avec huit Planches représentant quatre-vingt-huit espèces, dont soixante huit nouvelles: par B. C. PAYRAU- DEAU. 8vo. pp. 218. Paris, 1826. ....</i>	477
<i>Synopsis of the Newcastle Museum, late the Allan, formerly the Tunstall or Wycliffe Museum. By G. TOWNSHEND FOX, Esq., F.L.S., &amp;c. 8vo. pp. xxii. &amp; 312. Plates. Newcastle, 1827 ....</i>	478
<i>A Manual of Comparative Anatomy, translated from the German by J. F. Blumenbach, with additional Notes by W. Lawrence, F.R.S., &amp;c. Second Edition, revised and corrected by WILLIAM COULSON, Demonstrator of Anatomy, &amp;c. 8vo. pp. liv. &amp; 380. pl. viii. London, 1827. ....</i>	478
<i>An Introductory Lecture on the Study of Zoology, delivered at the Literary and Scientific Institution, Bath: by HENRY WOODS, Esq., Hon. Sec. 8vo. pp. 92. ....</i>	479

# CONTENTS.

No. XII.—*January—April, 1828.*

	Page
ART. XLIX. <i>Notes on the habits of a Caryophyllia from Tor Bay, Devon. By H. T. DE LA BECHE, Esq., F.R.S., F.L.S., &amp;c.</i> .....	481
ART. L. <i>Contributions to the British Fauna. By GEORGE JOHNSTON, M.D., Fellow of the Royal College of Surgeons of Edinburgh</i> .....	486
ART. LI. <i>Notice on the appearance of some rare Birds in England. By GEORGE TOWNSHEND FOX, Esq., F.L.S., Mem. Zool. Soc., &amp;c.</i> .....	491
ART. LII. <i>On the occurrence of some rare British Birds. By WILLIAM YARRELL, Esq., F.L.S.</i> .....	497
ART. LIII. <i>Notices of Insects, taken in the North of Ireland. By A. H. HALIDAY, Esq.</i> .....	500
ART. LIV. <i>Note on the foregoing Paper, with a Description of a new species of Anopheles. By J. F. STEPHENS, Esq., F.L.S., &amp;c.</i> .....	502
ART. LV. <i>Additional Observations to, and Corrections of, a Paper upon the Genus Staphylinus of Linnæus. By J. O. WESTWOOD, F.L.S., &amp;c.</i> .....	504
ART. LVI. <i>On Hydraspis, a new Genus of Freshwater Tortoises, of the Family Emydidæ. By THOMAS BELL, Esq., F.R.S., L.S., G.S., &amp;c.</i> .....	511
ART. LVII. <i>Characters of the order, families, and genera of the Testudinata. By THOMAS BELL, Esq., F.R.S., L.S., G.S., &amp;c.</i> .....	513

CONTENTS.

	Page
ART. LVIII. <i>Short characters of a few Quadrupeds procured on Captain Franklin's late Expedition. By JOHN RICHARDSON, M.D., F.R.S., F.L.S., &amp;c.</i> . . . . .	516
ART. LIX. <i>A Description of some Coleopterous Insects in the Collection of the Rev. F. W. Hope, F.L.S. By the Rev. WILLIAM KIRBY, F.R. &amp; L.S., &amp;c.</i> . . . . .	520
ART. LX. <i>Note on the Cardita concamerata. By G. B. SOWERBY, F.L.S., &amp;c.</i> . . . . .	526
ART. LXI. <i>Observations on the Zoology of the Caribæan Islands. By the Rev. LANSDOWN GUILDING, B.A., F.L. &amp; G.S., M.W.S., &amp;c.</i> . . . . .	527
ART. LXII. <i>On the Osteology of the Chlamyphorus truncatus of Dr. Harlan. By WILLIAM YARRELL, Esq., F.L.S. In a letter to N. A. Vigors, Esq., F.R.S., F.L.S. &amp;c. Secretary to the Zoological Society.</i> . . . . .	544
ART. LXIII. <i>A summary review of the authorities on which naturalists are justified in believing that the Dodo, Didus ineptus, Linn., was a Bird existing in the Isle of France, or the neighbouring Islands, until a recent period. By J. S. DUNCAN, Esq., New College, Oxford.</i> . . . . .	554
ART. LXIV. <i>Monograph on the Cypræidæ, a Family of Testaceous Mollusca. By JOHN EDWARD GRAY, Esq., F.G.S.</i> . . . . .	567
ART. LXV. <i>Description of a new species of Julis, Cuv. By E. T. BENNETT, Esq., F.L.S., &amp;c.</i> . . . . .	577
ART. LXVI. <i>Analytical Notices of Books:</i>	
<i>The Transactions of the Linnean Society of London. Vol. xv. Part II. 4to. pp. 200. Plates xviii.</i>	578
<i>Journal of the Academy of Natural Sciences of Philadelphia. Vol. v. Part i. Philadelphia, 1825. 8vo. pp. 204. Plates viii.</i> . . . . .	586
<i>Abhandlungen der Königlichen Academie der Wissenschaften zu Berlin. Aus dem Jahre 1824. 4to. Berlin. 1826.</i> . . . . .	590
<i>Histoire Naturelle des principales Productions de l'Europe Méridionale,—et particulièrement de celles des Environs de Nice et des Alpes Maritimes; par A. RISSO. Tomes iii. et v.</i> . . . . .	592

CONTENTS.

	Page
<b>ART. LXVII.</b> <i>Proceedings of Learned Societies on subjects connected with Zoology.</i>	
<i>Royal Society</i> .....	595
<i>Linnean Society</i> .....	598
<i>Zoological Club of the Linnean Society</i> .....	601
<i>Geological Society</i> .....	607
<i>Zoological Society</i> .....	610



EXPLANATION OF THE PLATES.



<b>PLATE XIII.</b> <i>Fig. 1—6. Caryophyllia Smithii.</i> .....	Page 486
1. The animal withdrawn within the coral.	
2, 3. The animal in progressive stages of expansion.	
4. The animal fully expanded.	
5. The Coral partially exposed; the animal occupying the cup.	
6. The Coral, after the soft parts have been taken away.	
7. <i>Julis Argus</i> .....	577
<b>PLATE XIV.</b> <i>Fig. 1. Scarabæus femoralis</i> .....	520
1.* ————— its anterior thigh.	
2. <i>Drepanocerus Kirbii</i> ♂ and ♀.....	521
3. <i>Chrysina Peruviana.</i> .....	523
4. <i>Emcephalus gibbosus</i> .....	524
5. <i>Adelium Hopii.</i> .....	525

PLATE XV.	<i>Fig.</i> 1—5. <i>Stenopus cruentatus</i> . . . . .	Page 527
	1. Animal repens auctum.	
	2. ——— ad latus visum.	
	3. Discus gressorius angustatus.	
	4. Testa prona.	
	5. ——— supina.	
	6—10. <i>Helicina Occidentalis</i> . . . . .	529
	6. Pullus.	
	7. Animal retractum.	
	8. ——— repens.	
	9. Testa.	
	10. Operculum.	

PLATE XVI and

XVII. Osteology of the *Chlamyphorus truncatus*. 544

- Fig.* 1. The entire Skeleton.
2. The head, front view.
  3. Upper jaw, and under surface of the head, seen from below.
  4. Lower jaw, side view.
  5. Cervical vertebræ, first bone of the sternum, with parts of the 1st and 2d ribs, seen from below.
  6. The Pelvis, seen from behind.
  7. ——— seen from below.
  8. Caudal vertebræ.
  9. Truncated extremity and tail.



THE  
ZOOLOGICAL JOURNAL.

January, 1827.

---

ART. I. *Some account of the Life and Writings, and Contributions to Science, of the late SIR THOMAS STAMFORD RAFFLES, Knt. F.R.S. S.A. & L.S. &c.; successively Lieutenant-Governor of Java and its dependencies, and of Fort Marlborough, Singapore, and the British Possessions in Sumatra: FOUNDER AND PRESIDENT OF THE ZOOLOGICAL SOCIETY.*

By E. W. BRAYLEY, JUN. A.L.S. & M. ZOOL. Soc.

---

*Auspicium melioris ævi.*

It is intended, in the present article, to furnish the readers of the ZOOLOGICAL JOURNAL, with an outline of the history, the character, and the exertions in the cause of Science and of Literature, of SIR STAMFORD RAFFLES:—that illustrious statesman and philosopher, to whose memory, for the foundation and endowment with his splendid collections, of an Institution devoted exclusively to the advancement of Zoology, a lasting debt of gratitude is due, from every cultivator and admirer of that science.

The production of this memoir has necessarily required the examination of the principal documents in which the actions of Sir Stamford Raffles have been recorded; together with the perusal of the works, and discourses, and official minutes, which, few in number as they are, are yet, alas! in consequence of the

disastrous loss of his Sumatran collections, and his premature demise, all that we now possess of the gifted spirit that animated their author. For this purpose, also, the subjects of philosophical inquiry to which his attention was more particularly directed, have been in some degree investigated. And the various objects of research thus passed in review, have excited a train of reflections on the relative history of those two quarters of the globe, the inhabitants of which have hitherto exercised the most important influence on the fortunes of the rest of mankind,—the history of Asia and of Europe,—which may serve appropriately to introduce the biographical details, during the collection of which they have been presented to the mind.

When we contemplate the history of Asia and of Europe, with respect to the origin of the Human Species, the first reception of Divine Revelation, and the rise of knowledge and of arts, in the former division of the world, and their gradual communication to and diffusion throughout the latter, the subsequent intercourse between Europe and Asia being at the same time considered, we are presented with a magnificent example of that unremitting circulation and reciprocal interchange of benefits, among the various communities of mankind, on which the welfare of the human race, regarded as a whole, appears to depend. And as the circulation of the vital fluid by which the existence of the body-natural is sustained, receives its impetus from the heart, as from a centre, whilst that organ is itself supplied with the means of impulse and governed in its motions by the brain, as the sentient ruler of the whole animal economy, so is the corresponding circulation of knowledge in the great body-politic always impelled and directed from some particular region of the world, which may thus be said to perform the functions of a heart to the whole; and it has the power of so doing, because its inhabitants are the direct recipients of Divine Revelation, which, with the consequent blessings of general knowledge, of arts, and of civilization, they become the means of distributing to all the other inhabitants of the earth.

The human race was first called into being in Asia, and from the era at which the glorious work of Creation was thus perfected, down to some ages after the establishment of Christianity,

the office just described, was enjoyed, with some occasional and perhaps merely apparent exceptions, by various Asiatic nations; as it has since been fulfilled by the inhabitants of Europe, and at some future time, probably, will be possessed by those of America. In the earliest ages, every great division of the globe appears to have been peopled from Asia: the authority of the Sacred Records, and the testimony of the traditions and the history of all the nations of the Eastern Hemisphere, concur in establishing the fact, that Europe received her chief population from the East, by the way of the ancient Scythia; or the tract of country situated to the north-east of the Caspian sea, bounded eastward by the mountains of Imaus, which formed part of the present Belour and lesser Altaian chains, and on the west by the river Tanais, the Don of modern geography. So likewise have we strong grounds for believing, that the western shores of the two Americas were first peopled from the eastern coasts and islands of Asia, by way of the Eastern and Pacific oceans; whilst the tide of population appears to have rolled southward into Africa, from the Caucasus, through Asia Minor, Syria, and Egypt.

In the next age of the world, during which flourished the mighty empire of Egypt, and the first great nations which arose in the countries between the river Indus and the eastern termination of the Mediterranean Sea, Asia continued to be the fountain-head of knowledge and of the arts, of commerce, and of civilization; for the renowned state first mentioned, though forming a part of the African continent, as to geographical position, must yet be regarded, in its ancient relations to the rest of the world, as a region of Asia.

Hitherto the enjoyment of religious light had been directly attended, as would appear always to be the case in a right order of things, by the possession of the highest degree of genuine civilization, and of temporal power. But the history of the Jewish nation presents an anomaly in this respect, which, though we can merely glance at it in this place, would form a novel subject of inquiry for the Divine and the Philosophical Historian. The dispensation of pure Theism granted to Noah and his descendants,

having in the lapse of ages been perverted into polytheistic idolatry of the grossest character, the Mosaic dispensation took place. But though the Israelites thus became the depositaries of revelation, yet were they greatly inferior in civilization and mental acquirements, to their neighbours the Phœnicians, as well as to the Assyrians, whose empire was at this period at the zenith of its glory. Still however from Western Asia proceeded all the streams of knowledge which fertilized the rest of the world; and though the ascendancy which the Greeks and Romans, in subsequent times, successively obtained over the affairs of mankind, partially carried forward into Europe the chief seats of power and intellectual cultivation; yet the sources of their greatness had been received directly from Egypt and the East, and their empires were established in districts of the European continent, lying immediately adjacent to that of Asia.

This anomaly in the history of the world, appears to have arisen from some peculiarity in the character of the Jews, which, whilst it fitted them to be the instruments of preserving a written revelation, rendered them incapable of pursuing the refinements, whether moral or intellectual, which are invariably consequent on the full reception of revelation, and its development throughout the human faculties. But the establishment of Christianity restored all things to order; and henceforward the possessors of Divine Truth became the rulers of mankind, and enjoyed the highest degree of intellectual attainment; the new condition of things being first consolidated, by the erection, in the fourth century, of a powerful Christian state, the "Eastern Empire" of historians, in the very centre of the then civilized world. In proportion, however, as Christianity advanced in Europe, it declined in Asia, and when its former seat on the shores of the Euxine was no longer useful as a medium of its communication to the surrounding world, in consequence of the corruptions it had there sustained, the fall of Constantinople before the Mohammedan arms, in the year 1453, terminated the independence of the Christians in Asia. Western Europe now became, as it has continued to be, the grand centre of vital impulse to the globe; the chief seat of religion, of power, of science, and of the arts. The

liberal pursuits and other refinements of the oriental nations, had hitherto but tardily succeeded the diffusion of Christianity; but the professors of literature and of philosophy, who were driven from their homes and native clime by the success of the Musselman power, distributed throughout the nations of Europe, in return for the hospitable reception they experienced, the intellectual wealth of which they were possessed. The wars for the recovery of the Holy Land from the Mohammedans, were commenced and carried on during the decline of the Eastern Empire: they were continued, with varying effect, until the end of the thirteenth century, when Palestine was finally abandoned to the dominion of Islamism. The Crusaders, though they failed in permanently effecting the professed object of their warfare, were yet the means of introducing into their own countries, many of the arts and usages of the East: among the former was that peculiar species of Architecture, so generally adopted in Europe, from about the period of the second crusade, in the twelfth century, down to the era of the Reformation, which, from the figure of its arches and ornaments, is most accurately designated the "Pointed Style." The practice of Heraldry, also, or the appropriation of symbolic distinctions to ranks and families, so important in the Feudal and Chivalric ages, although the claims to a direct oriental origin, which have been asserted for it by some writers, do not appear to have been substantiated, was certainly much improved and extended during the latter Crusades. Great improvements in the decorative arts were at the same time transferred from the East; and some useful additions appear also to have been made to the scanty assemblage of facts and precepts, which then constituted the sciences of Medicine and Pharmacy.

The chief points of relation between Europe and Asia, until the direct transfer of benefits from the latter had ceased, being of a religious and civil nature, the comprehensive notices of them which have been given, may perhaps appear misplaced in a scientific journal. But the extent to which Sir Stamford Raffles carried the views of investigation he entertained regarding the history of the East, rendered it desirable to commence this memoir of his labours with a sketch of the relative history of the

Eastern and Western divisions of the Old World ; and from this design the subjects we have touched upon were inseparable. We now enter, however, upon a period in the history of the world, in which the votaries of science are directly interested ;—upon the memorable era in which it was destined that the continents of the Western Hemisphere on the one hand, and the navigation around Africa to the Indian Ocean, on the other, should become known to the inhabitants of Europe.

As intimated in the foregoing paragraph, Europe, at the fall of Constantinople, appears to have received from her Eastern sister all the remaining advantages of a moral and intellectual nature it was in her power to bestow. The direct communication between them now ceased altogether, and was only renewed, after the success of the voyages of discovery undertaken in the fifteenth and following centuries. The pilgrimages to Jerusalem as well as the Holy Wars, had imparted to the Religious, who were the chief, if not the only followers of literary pursuits at this era, some actual knowledge of Western Asia, with a few notices of Arabia and Persia, gleaned from the traders to those countries. But all that was known of India and the “ further East,” was derived from the geographers and naturalists of classic antiquity. Hence it is that in the first works on geography, published after the invention of printing, and which of course had been the most esteemed whilst in manuscript, (a sufficient interval not having elapsed for their improvement from the discoveries in geography that had just been made,) we find Strabo, Ctesias, Pliny, and Solinus, with other writers of the same description, constantly referred to as the only authorities on subjects relating to Eastern Asia ; their statements being received and relied upon with implicit confidence. The means of comparing these statements with the actual condition and history of the countries described, were now, however, to a certain extent, speedily obtained.

The descendants of the Phœnician colonists on some of the eastern coasts of the Atlantic, and the northern shores of the Mediterranean, who had always retained a portion of the adventurous and enterprizing spirit of their ancient progenitors, began, towards the latter part of the fifteenth century, to manifest that

spirit in a very marked degree. Voyages of discovery were undertaken by them in every direction, and also by the other maritime nations of Europe; and whilst Columbus and his successors traversed the Atlantic in a westerly direction, and discovered the two Americas, Vasco de Gama pursuing his voyage southward along the western shores of Africa, doubled the Cape of Good Hope, and crossing the Indian ocean, guided by the friendly pilots of Melinda, first opened for Europe a direct intercourse with Hindûstan, in the year 1498. Other Portuguese navigators, early in the sixteenth century, successively formed settlements in Sumatra, Malacca, and Java; they were followed by the Dutch, whose influence in the Indian Islands soon overpowered that of all the other nations of Europe. The establishment of the British East India Company in the reign of Elizabeth, led to the foundation in several provinces of the Indian continent, of some important settlements; by the gradual extension of which, and various concurring events, nearly the whole of Hindûstan has at length become a province of the British Empire.

An important intercourse has thus been re-established between Asia and Europe; though differing in several material respects, from that which subsisted in former ages. For Europe, by the use and improvement of the advantages she then received from her oriental sister, having obtained the supremacy in the affairs of the world, now exercises in Asia the authority anciently exerted in Europe, by the different Eastern states, whether geographically Asiatic or European. In return for the spices, the rich commodities, and the costly manufactures, which she now imports from "the climates near the sun," she investigates their natural and civil history, the characters of their population, their mythology, their languages, and their literature, for the purpose, first, of increasing her own intellectual wealth, and then of applying it in the most effectual manner, to repay, by the blessings of true religion and civilization, the debt of gratitude she owes to that region, where the "Day-spring from on high," as well really as figuratively, first dawned on the happiness of man.

In ancient times, also, the communication of Europeans with

Asia, was confined to its Western divisions, but at the present day it is with the Eastern Asiatics that they are principally connected; and British India,—which may be said to comprehend the whole of the Peninsula between the mouths of the Indus and the Ganges,—the territories of Malacca, Siam, and Cochin-China, with the Empires of China proper and Japan, and the islands of the Indian Archipelago, are now indubitably the most important districts of the whole continent; whether regarded with philosophic or with commercial views.

Terminating here our historical review of the relations to each other of those two divisions of the world, the ruling powers of which have successively enjoyed the chief sway over the destinies of mankind, we proceed to notice the principal benefits that have accrued to the nations of Europe, from their possessions and authority in Eastern Asia; especially those derived by Britain from her Indian conquests; dwelling more particularly on the advantages which modern science has either received already, or may yet receive, from the vast field of research thus opened for her cultivation. Having done this, we shall find in the powerful and continued exertions made by Sir Stamford Raffles towards effecting some of the investigations thus called for from the patrons and the votaries of knowledge, an appropriate and sufficient apology for entering into details, on an extensive range of subjects in philosophy and literature, in a work professedly devoted to Zoological Science.

To expatiate on the political and commercial importance of Eastern Asia to the nations of Europe who have possessed settlements on its shores, or to dilate upon the history of those “Merchant-Princes,” as they have appropriately been denominated, who now hold in the metropolis of Britain the reins of government over an immense population in India, constituting, in an age not long since expired, several mighty empires, with innumerable tributary states; and who appear destined, eventually, to extend the British dominion over all the countries of Southern Asia, from the Bay of Bengal on the west, to the seas of Japan and Ochotsk on the east, would be foreign to the objects of this memoir. Nor would the picture be in all respects an



agreeable one; for the ascendancy thus gained in the Eastern world, owing to the lust of power and of wealth which mark the darker shades of the European character, and the faithlessness that stains the Asiatic, has been purchased at an expenditure of human blood too enormous to contemplate without horror. Turning then from these scenes of conquest and political greatness, let us direct our views to the fair regions of intellectual power, where the best feelings and perceptions of our nature can dwell with unalloyed delight in the contemplation of objects worthy of the human character;—objects entirely consonant with the great ends of our being.

The establishment and extensive prosecution of a commercial intercourse with India, by the principal maritime nations of Europe, was not productive, until nearly two centuries had elapsed, of any considerable accession to the stores of oriental knowledge.

During this period, one great portion of mankind in Europe was intent on the schemes of conquest and the prospects of wealth excited by the success of the first adventurers in the newly-explored seas. Another part of the community, and that by far the more intelligent, was occupied either in issuing to the world, by means of the new art of printing, the works of the ancient poets, historians, and philosophers, with the commentaries on them produced in the monastic ages, or in the disputes on Theological subjects which at length terminated in the Reformation. And when that momentous change had been effected, the writings of Bacon gave an impetus to experimental philosophy, that caused it to exercise an absorbing influence over the minds of the new race of inquirers it had called forth. From the joint agency of these circumstances, the oriental fields of research long remained almost without cultivation. With America, indeed, the case was different; a multitude of writers, chiefly natives of the countries which first obtained settlements in the Western Hemisphere, were engaged in researches on the origin and nature of the people and the productions, so recently made known to them. The cause of this preference is evident: the discovery of America was that of a “New World:” with inhabitants, natural phænomena, and productions of every class,

dissimilar in all respects to those of the “ Old World ;” whilst the expeditions to the East only brought under actual observation what had from time immemorial been known, in some degree, from the relations of the ancients, and the occasional gleams of information received from other sources. The investigations relating to America formed themselves a further cause, why the subjects of inquiry arising from the newly-established connexions with Asia, were so much neglected, by occupying the minds of those writers, who were probably the best qualified for such researches.

Accordingly, until the termination of the sixteenth century approached, very little was done towards exploring the East ; and the principal information respecting its history and productions, published in Europe, was collected from the voyagers and commercial adventurers ; a class of people at the era to which we allude of much inferior qualifications for any kind of scientific research, or even the correct description of what they had witnessed, than the most deficient of their present representatives.

The zeal and perseverance of the Jesuits, commenced, in China, the first direct researches into the history and resources of any Eastern nation, and the materials which were thus collected by its members, continued, until a late period, to be the only sources of information respecting that interesting country. But it is to the more enlightened agents of the Dutch, to their physicians and clergy, that we owe the commencement of those investigations, which, guided from the beginning by a philosophic spirit, and continued, chiefly, by our own countrymen, have at length penetrated into the deepest recesses of the mythology and history of Eastern Asia ; and have also been extended to every object of scientific inquiry afforded by its various climes, from the snow-clad peaks of the Himalaya, “ whence, bursting from its icy bed, the mighty Ganges flows,” to the sultry and pestilential marshes of Batavia. The most distinguished of these enterprising founders of oriental science and literature in Europe, was the celebrated Kämpfer, a German physician, who, possessed of a genius for research adequate to the most difficult subjects, and an acuteness of perception which no disguise of circumstances could elude, extended his

personal observations to India, Persia, and Japan. His *Amœnitates Exoticæ* contain the first distinct notices of many productions of the East; and his great work on Japan, published about 1720, to which, in the course of this memoir, we shall again have occasion to advert, in comprehensiveness of plan and accuracy of detail, has never been surpassed by any similar publication. About the same time, many of the most interesting subjects of the Animal and Vegetable kingdoms which the tropical regions of Asia produce, were illustrated by Rumphius, likewise of German birth, but agent for the Dutch at Amboyna; whilst the plants of southern Hindûstan were described by the laborious Rheede; and the works in which the results of their inquiries were communicated to the world, the *Thesaurus Imaginum* and *Herbarium Amboinense* of the former naturalist, and the *Hortus Malabaricus* of the latter, after furnishing Linnæus with the means of characterising and arranging a multitude of species, still retain great authority, not merely as works of reference, but as recording the history of many subjects, that have hitherto escaped the observation of modern naturalists. Of similar value, with respect to the geography and local history, as well as the natural productions of Eastern India, are the labours of Valentyn, chaplain to the Dutch at Amboyna; to the accuracy of whose statements every succeeding traveller has borne testimony; and the voluminous "*Inde orientale ancienne et nouvelle*" of this writer, which was published at Dordrecht and Amsterdam, from 1724 to 1726, conducts our narrative to within a century of the present time.

The geographers and naturalists we have enumerated, had many contemporary labourers in the same field, some of whom, as well as of their immediate successors in the exploration of the East, it would be equally desirable to particularize; but this Introduction has already extended to a length much greater than that it was originally designed to occupy. We proceed, therefore, at once, to the concluding section:—an outline of some of the principal accessions to the knowledge of mankind and of nature, that have been received, during the last thirty years, from the exertions of modern science on the innumerable objects of inquiry, which

the people, the physical structure, and the varied natural productions of the East Indies have suggested.

So extensive have been the additions to knowledge obtained by the labours, chiefly of our own countrymen, in Hindûstan and the adjacent countries, that it is difficult to confine our selections within the necessary limits; we are struck, also, on every side, with the beauty and the interest of the scene, and scarcely know to what particular objects we should direct our chief attention. In the first rank, however, if not absolutely of the greatest importance, we must place the full development, by that revered cultivator of oriental literature, Sir William Jones, of the essential identity of the mythologies of India, Greece, and Rome; with his examination of the allegorical fables in which the mighty works, ascribed, by the Hindûs, to the incarnate Krishna, and by the western Gentiles, to Hercules and Apollo, indicate the prophetic hopes of the Redeemer so universally entertained in the ancient world. Another fact of the greatest consequence to the mythologist, which has resulted from the researches of our oriental scholars, is the extent to which the Hindû or Bûddhaic faith, or some of its affiliations, is now known to have prevailed. This appears to have comprehended not only the two peninsulas of India, and the country of Thibet, but also the islands of the Indian Archipelago, and the Empires of China and Japan; so that the Hindû deities were once worshipped, throughout the south-eastern countries of Asia. Intimately connected with this subject are the discoveries in ancient history which have been made by the comparison and critical examination, of the historical manuscripts and inscriptions of the various nations inhabiting oriental Asia; and in which an eminent foreigner, M. Julius Klaproth, has taken so distinguished a part. Another great branch of the history of man, is that of his means of embodying his thoughts, first in articulate sounds, and then in forms apparent to the sight expressive of those sounds;—the history and philosophy of language. This also has been greatly improved and augmented by the investigation of the Indian languages; and the labours of Wilkins and Colebrooke in Sanscrit, and of Morrison in Chinese, in conjunction with those of their contemporaries in

the same pursuits, have established the foundation of a department in philology, on which future students will look back with gratitude, and future grammarians and philosophers erect a magnificent superstructure.

We pass, however, from the history of man to that of the globe he inhabits. Here we have our attention first arrested by an important contribution to Physical Astronomy, effected in India by the zeal, ability, and indefatigable perseverance of the late Lieut. Colonel Lambton, under the munificent patronage of the East India Company. This is the determination of the longest continuous arc of the meridian yet measured on the surface of the earth; extending from Cape Comorin, the southern extremity of Hindûstan, through twelve degrees of north latitude, to near the city of Ellichpore in the province of Berar. It has been further prosecuted beyond N. Lat.  $20^{\circ}$ , is still in progress under the direction of Captain Everest, and will probably be completed to an uninterrupted portion of more than twenty degrees. The recent investigations and experiments to determine the figure of the earth have shewn this measurement to possess a greater value with regard to that subject, than was ever contemplated, perhaps, when the undertaking was commenced; although the application of the Pendulum in determining the ellipticity of the meridian, had not then been made to any important extent, and the measurement of terrestrial degrees was considered the principal means of solving the problem. For "experience has fully shewn, that no result of decisive character is to be expected from the repetition or comparison of measurements in the middle latitudes; and that it is only from operations carried on in portions of the meridian widely separated from each other, that such an event can be regarded as of probable accomplishment."\* And from the comparison of the tropical extremity of a meridional arc in the northern hemisphere, which has thus been determined in India, with the measurement proposed to be effected within the Arctic Circle, a conclusion may be expected, equally satisfactory with that which has resulted from carrying into effect, under the con-

\* Sabine's Experiments to determine the Figure of the Earth by means of the Pendulum, p. 360.

ditions most favourable for the experiment, the method of investigating the figure of the earth by means of the Pendulum. During the government of Sir Stamford Raffles in Sumatra, a series of observations was made on the length of the pendulum at the Equator, by a scientific expedition from the Observatory at Madras, for the purpose of assisting in the determination of the figure of the earth; and as the successful attainment of the objects of this expedition, was owing, in great measure, to Sir Stamford's counsel and protection, we must recur to the subject in the course of this article.

But the importance of Colonel Lambton's operations is not confined to the improvement of physical astronomy; for they were extended eastward and westward of the arc itself, and the Coromandel and Malabar coasts also connected by triangulation, in numerous important points; thus forming the basis of a complete trigonometrical survey of the Peninsula. The present extremely defective state of our knowledge, indeed, of the topography of India, imperiously demands the speedy completion and publication of a correct general survey, without which much of the local history already obtained, both natural and civil, must remain nearly useless to inquirers in Europe.

Next in order to the constitution of the earth as a planet, have we to consider the history of the mass of elastic fluid, with which it is invested, and which is indispensable to the existence of every subject of organic nature, as well as to the preservation of the surface of the globe in a fit condition for its support. The contributions to Meteorological Science derived from researches in the East, have, for obvious reasons, been very few. The investigation of the seemingly most capricious and irregular, but in reality all-harmonious and beautiful cycles of changes, to which the atmosphere is perpetually subject, requires a train of laborious exertions, uninteresting in themselves on account of their minuteness and apparent insignificance, continued, for a long period of time, on the same spot. And to such exertions as these, neither the leisure nor the health of many residents in India, or the countries adjacent, can be adequate. Still, however, some points

of great interest have been elucidated, by the observations of our countrymen in the Peninsula.

The horary oscillations to which the barometer is subject in all latitudes, but which, from the absence of the disturbing causes affecting the atmosphere in the temperate zones, are more prominent between the tropics, were first observed by Lamanon, in the expedition under the unfortunate Peyrouse: and the earliest confirmation of the fact, appears in Dr. Balfour's observations, made at Calcutta, in 1794, and published in the fourth volume of the Asiatic Researches.\* To Mr. Goldingham, of the Observatory at Madras, a zealous observer, both in Astronomy and Meteorology, we owe the first satisfactory train of researches on an important subject in Acoustics, intimately connected with the study of atmospheric phænomena: viz. the influence of the ordinary changes in the air, whether of pressure, temperature, or humidity, or in the force and direction of the winds, upon the velocity of sound.† The most interesting accession, however, which the East has contributed to meteorological science, is unquestionably Mr. Williams's account of the explosion of a meteor near Benares, in 1798, and of the falling of some stones at the same time, which he communicated in the following year, to Sir Joseph Banks. This narrative afforded the most indubitable evidence of the descent of meteoric stones, at the period when the late Mr. Howard and the Count de Bournon undertook the investigation of the subject. And it still remains one of the most valuable records of that remarkable phænomenon; though the reality of the fall

\* See Daniell's Meteorological Essays, p. 252. Further observations on this very interesting subject have been made in various latitudes, by M. de Humboldt, Captain Sabine, M. Ramond, and Mr. Daniell; which prove, "that while the irregular movements of the atmosphere and the general range of the barometer increase, in going from the equator towards the poles, there is a regular concomitant fluctuation, which augments, as we proceed from high latitudes towards the equator." This phænomenon remained, until lately, one of the unresolved problems of Meteorology, but it appears to have received a satisfactory solution from Mr. Daniell; though much still remains to be done for its complete elucidation. Ibid. p. 255.

† See Phil. Trans. for 1823.

of meteorites having been, at length, as well established as that of volcanic eruptions, or any other great phænomenon of nature, the value possessed by accounts of particular cases, must now be estimated by a standard, different from that to which they were applied, at the period when the attention of philosophers was first arrested by the subject. For their utility depends, at the present time, not so much on the evidence they afford of the actual occurrence of the phænomenon, as on their precise and comprehensive description of the attendant circumstances. Mr. Howard and his coadjutor, in their paper detailing the investigation just alluded to, which was published, including Mr. Williams's narrative, in the Philosophical Transactions for 1802, and which is an admirable example of inductive research, inferred, from the affinities borne by various specimens of Native Iron to the stones known to have fallen from meteors, that the same origin was to be ascribed to them; and the correctness of this inference was immediately admitted by philosophers. The learned archæologist Edward King, had already communicated to the public, the Abbé Stutz's account of the fall of two masses of iron near Agram in Croatia, in 1751; but as Mr. King, though he quotes the Abbé's words proving these meteorites to consist of *iron*, invariably alludes to them himself as being *stones*,\* this instance, it would appear, was altogether overlooked by contemporary inquirers in England; and thus an important link in the chain of evidence seemed to be wanting. The deficiency was soon supplied from the oriental collections of Colonel Kirkpatrick, who communicated to Mr. Greville, an extract from the autobiographic memoirs of Jehanguire, narrating the fall of a mass of iron in the Punjaub in the year 1620; and this interesting document being presented, by that distinguished patron of science, to the Royal Society, was printed in the Philosophical Transactions for 1803. The progress of knowledge respecting meteorites, therefore, has been essentially benefited by information from India.

The discovery, or rather the exploration, of the vast central chain of mountains forming the barrier between India and Thibet, and called the Himalaya, or "the abode of snows," which have

\* Remarks concerning Stones said to have fallen from the Clouds, p. 23.



been found to exceed in altitude as well as lateral extent the Andes of South-America, hitherto deemed the greatest mountains in the world; together with the discovery or examination of the elevated sources of the Indus, the Ganges, and the Brahmapûtra, the three grand rivers of India, constitutes a memorable epoch in the history of Physical Geography. When these discoveries, indeed, are viewed in conjunction with the innumerable facts of minor, yet considerable importance, that depend on the newly-acquired knowledge of the climate and other peculiarities of the extended table-land of Nepal and Thibet, we must acknowledge this epoch to be hitherto unequalled in the progress of that science.

In the kindred science of Geology, however, but one department has yet received any considerable additions from researches in the East; viz. that relating to those igneous phænomena, to the causes of which, operating at a remote period in our planet's physical history, an extensive and consonant series of facts impels us to refer the formation, to a great extent, of our present continents:—we allude to the phænomena of volcanos. Prior to Dr. Horsfield's geological investigation of Java, and Sir Stamford Raffles's exertions in obtaining accounts of the eruption of Tomboro, in the island of Sumbawa, in 1815, the provinces of Mexico, Guatemala, and Nicaragua, in North-America, and the western side of South-America, appeared to be the only countries in the world, in which the chemical agency productive of intense combustion, exerted to so great an extent in the early stages of the earth's formation, still retained a vigour approaching to what it must have possessed in former ages. But the volcanos of the Indian islands east of Sumatra; are now known to indicate an activity in the causes of volcanic energy, fully equal to that which the Cordilleras of America exhibit; the most stupendous phænomena recorded of the latter, receiving a parallel in the operations of subterraneous fire witnessed in Java and Sumbawa. To these we shall have occasion to return, as we proceed in this memoir.

Very little information, on the contrary, has yet been obtained, respecting the actual structure, either of the Indian peninsulas or of the islands; and hence the contributions from the East to that branch of geological science, which is concerned in investigating

the arrangement and mutual relations of the rocks and strata forming the earth's surface, are scanty and indecisive. We know, indeed, generally, that like other parts of the world, they consist of primary, transition, and secondary tracts, mingled with immense overlying masses of trap-rocks; but whether laws of superposition are to be observed in these tracts, similar to those which obtain in the corresponding districts of Europe, and whether their formation is referable to the same eras, we are altogether uninformed. Thus a vast field of geological inquiry remains uncultivated; and we have been induced to mention in so particular a manner this deficiency of natural knowledge, whilst enumerating the accessions to it derived from our Indian possessions, with the hope of exciting some attention to the subject in the world of science.

Having thus delineated a few of the improvements which have been made in some of the greater divisions of human knowledge, arising from our Indian resources, we might, in the next place, proceed to examine how far the various departments of Natural History are indebted to the same sphere of research. Taking up, in succession, each of the three kingdoms of nature, we might particularize the advantages which the philosophical pursuit of Mineralogy, of Botany, and of Zoology, respectively, has derived from our acquaintance with the productions of the East. These, it would be found, are fully commensurate with the "*augmina scientiarum*," to which we have already adverted. But enough has now been stated or alluded-to on the subjects we proposed to review in this Introduction, to prepare the reader for duly estimating the importance and fertility of the field, that was opened to the cultivation of the distinguished character, whose history we are about to narrate. The outline we have commenced will not remain altogether incomplete, by terminating it at this point; for, in detailing the contributions to natural knowledge effected by Sir Stamford Raffles, or in consequence of his patronage, we shall have occasion to notice several discoveries of considerable moment in Mineralogy and Botany; as well as to review at some length, the oriental accessions to Zoological science.

Such, then, was the importance, and such the promise, with

respect to the pursuit of every branch of liberal knowledge or of scientific research, of those extended realms, which comprised the peculiarly interesting, though, comparatively, little known countries, that were placed, eventually, under Sir Stamford's government.

They were thus presented to the contemplation, of one whose comprehensive genius could at once perceive the kind of investigation they required, and whose indefatigable activity in the exercise of his power, could procure, with the same readiness, the means necessary for inquiry. The versatility of talent he possessed, was fully adequate to the demands made upon it, by the variety of circumstances around him. Sir Stamford Raffles was competent to the most difficult and trying situations, in which the ruler of countries, inhabited, partly, by Europeans of different nations, and often of conflicting interests, and partly by Natives still more various in character, could be placed. He could estimate and determine, with facility, the claims of these regions to the attention of the statesman, the scholar, and the naturalist. He was well qualified to bestow upon them the beneficent care of the enlightened philanthropist, anxious to ameliorate the moral condition and consequent happiness of the population committed to his charge, by the most intelligent and efficient means.

Nor was he less distinguished by the energy and promptitude with which he executed every plan of improvement suggested by these diversified relations. Having risen to his exalted station solely by the force of his talents and his application, this energy was often required to surmount the opposition excited by the jealousy of those persons, whom he might be supposed to have superseded, whether in weight of influence and authority, or in official situation. The more confined views of others, also, who had been accustomed to a line of colonial policy dictated by notions, which an age that is rapidly approaching will consign irretrievably to the darkness from whence they originated, demanded, not unfrequently, the exercise of the same qualities. And, above all, these varied talents, in Sir Stamford Raffles, were animated and ennobled by the free-born and independent spirit, the generous love of knowledge, and the desire of imparting it to others, the love of freedom, and the love of making others free,—of giving

liberty to the mind as well as to the body—which are the pride and glory of the British character.

But it will not be consistent with the design of the present memoir, to enter into any details regarding the political conduct of Sir Stamford Raffles; we are alone concerned, in this place, with the actions of his life as a patron and a votary of knowledge; and the political transactions in which he was engaged will be noticed in the following pages, no further than may be requisite, in order to convey a satisfactory view of the various stations he occupied, and impart to the whole the unity of a connected narrative. His exertions in the cause of general knowledge, of science, and of literature, with outlines of the philosophical investigations which he either pursued himself, or encouraged and enabled others to prosecute, will form the chief subjects of the article; whilst his contributions to that department of Natural History to which the pages of the *Zoological Journal* are especially devoted, will receive the particular attention they of right demand.

We now proceed to the biography of this eminent individual: His father, Benjamin Raffles, was one of the oldest captains in the West India merchant-service, belonging to the port of London; and his uncle, a solicitor of eminence in the city, but recently deceased, was the father of the Rev. Thomas Raffles, LL.D., celebrated from an early age as an eloquent preacher in the Independent dissenting connexion, and who is at present the minister of a congregation at Liverpool, belonging to that denomination. The subject of this memoir, THOMAS STAMFORD RAFFLES, by what might be regarded as a remarkable coincidence with the events of his future life, as passed in distant lands, and as connected with maritime adventures, was born at sea, on board the ship *Anne*, off the harbour of Port Morant in Jamaica, on the sixth of July, in the year 1781. He received his education, principally, at a respectable academy at Hammersmith, conducted by Dr. Anderson; and entered public life at a very early age, in the Home Establishment of the Honourable East India Company, as a junior clerk in the Secretary's Office. In this situation he became distinguished, in a short time, as the most efficient clerk in the office, where he continued for several years. But he was soon to commence those labours in an Eastern clime on which his sub-

sequent reputation and prosperity were founded. The island of Pulo Penang, situated on the western coast of the peninsula on which the Malayan empire flourished in former ages, and which is still one of the principal seats of that nation, had been ceded to the East India Company about the year 1786, and denominated Prince of Wales's Island. Being found a valuable post for the protection of the trade with China, and the encouragement of commerce among the Eastern Islands, it was formed into a government, with a regular civil and military establishment, in the year 1805. The talents and industry of Mr. Raffles, as we must for the present designate him, having obtained the favourable opinion of the Court of Directors of the Company, the appointment of Assistant-Secretary to the new settlement, notwithstanding the exertion of powerful influence in favour of other candidates for the office, was conferred upon him, although he was yet a mere youth; together with the rank of junior merchant, and an eventual succession to the council.

About this period Mr. Raffles was united in marriage with the widow of a surgeon in the East India service; and in a short time afterwards, pursuant to his appointment, he proceeded to Prince of Wales's Island, in company with Governor Dundas, and the other gentlemen of the civil department. During the voyage thither, he applied, with great diligence and success, to the study of the Malay language, which prevails not only over the peninsula already mentioned, but also throughout the maritime regions of the Asiatic Isles, and is the vernacular dialect of a population equal to or perhaps exceeding that of the Indian continent. This judicious and appropriate preparation for the business in which he was about to engage, rendered him, immediately on his arrival at the Island, a valuable acquisition to the government; and his conduct received, accordingly, the approbation of the Court of Directors at home.

On reviewing the gradual means by which the most distinguished individuals of the human race, in modern times and in civilized society, have attained their highest stations, their greatest influence over their contemporaries, and their strongest claims to the regard of mankind in general, we may usually observe the following order to have obtained in their advancement. They have

commonly pursued, at the outset of their career, directed partly by their own genius and inclination, partly by the force of surrounding circumstances, a certain line of study or path of occupation, and have quickly risen, accordingly, to some degree of eminence, in their respective departments of human affairs.

At this epoch in their fortunes, some event has befallen them, apparently trivial in itself, some production in art or nature, some work of science or of literature, has deeply engaged their attention, or an intimate acquaintance has been formed with some man of talent or of consequence and weight in society—which has given all their energies a decided and permanent, and, comparatively, exclusive direction, towards one grand object of pursuit; and this object they have in consequence secured, to a considerable extent, as it were at one grasp.

This appears especially to have been the case, when their distinction has been created, directly, by their superiority in mental endowments, and when also they have been elevated from an inferior rank in society, solely by the force of their own talents.

The great WATT, for example, the author of those improvements in the Steam-engine, which have produced such stupendous effects in the arts and manufactures of this country, having a genius for mechanism, commenced life as a maker and repairer of philosophical instruments and apparatus. In this business he speedily became eminent; but having the model of a steam-engine placed in his hands to repair, his mind was awakened to the importance of that machine, and the perfection of which it appeared susceptible. Devoting himself henceforth to the construction of the steam-engine, he soon atchieved the capital improvement of the separate vessel, for condensing the steam, after it had given motion to the piston, on which the perfection of the engine, as now used, primarily depends. In a few short years after this, in conjunction with Mr. Boulton, he supplied all Britain with steam-engines, and acquired the exalted reputation which he ever afterwards retained, and which a grateful posterity will ever award to his memory.

Thus also the illustrious HERSCHEL, after pursuing for some years, with enthusiasm and success, his profession as a musician and teacher of music, became acquainted with the wonders of the

planetary system, as described in Ferguson's Astronomy. Actuated by a vehement desire of witnessing, with his own eyes, phænomena so remarkable, whilst the price of a telescope capable of exhibiting them far exceeded his means, he resolved to construct such an instrument with his own hands. Accordingly, after overcoming many difficulties, he completed a reflecting telescope, with which he could observe the satellites of Jupiter and the ring of Saturn. Henceforward his mind was directed to the exploration of the heavens; and in the space of seven years from this period, he had enrolled himself among the greatest of astronomers, by the discovery of a new primary planet, the Georgium Sidus.\*

And, to conclude these illustrations with an instance selected from those votaries of science, who still live to benefit mankind, to an incident equally devoid of importance in itself, we owe the discoveries of SIR HUMPHRY DAVY. Whilst preparing for the medical profession, in Cornwall, his native county, he had acquired a strong interest in the pursuits of Geology and Chemistry, which his peculiar genius for analytical research had gratified in some successful inquiries. He then became acquainted with Mr. Giddy, now Mr. Davies Gilbert, himself a distinguished natural philosopher; and this gentleman, duly appreciating his talents for Chemistry, warmly seconded his intention of superintending the Pneumatic Institution, founded by Dr. Beddoes, at Bristol. Here were made his "Researches on Nitrous Oxide," published in the year 1800; soon afterwards he was appointed Professor of Chemistry at the Royal Institution, and in 1807 he effected his great discovery of the metallic bases of the alkalies, a discovery that quickly changed the aspect of chemical science, and which was succeeded by the train of brilliant investigations for which their author has been rewarded, by his elevation to the Chair of the Royal Society;—a station successively distinguished, in a former age of science, by a WREN and a NEWTON.

Now it was in the order just described and illustrated,—to return from the digression into which we have been led, by the desire of taking an enlarged view of this subject—it was by means of a train of circumstances analogous to those just related, as con-

\* See Edin. Phil. Journ. vol. viii. p. 211.

cerned in the advancement of a Watt, a Herschel, and a Davy, that the genius of SIR STAMFORD RAFFLES also received that confirmed and lasting impulse, which eventually procured for him his elevated rank in society, and his high reputation as an enlightened and a philosophic statesman.

We have seen that his appointment to the office of Assistant Secretary in the Government of Prince of Wales's Island, first led him to those acquisitions of knowledge regarding the Malayan countries, which subsequently become so useful in extending and securing the British dominion over "the Further East." But about the period of his arrival at the Island, he formed an acquaintance, which ripened into an endearing friendship, with "the Bard of Teviotdale,"—the late lamented philologist and historian, Dr. Leyden: the example afforded him by the ardent and powerful mind of this accomplished scholar, and the assistance he derived from the varied lore with which that mind was replete, appear to have determined his pursuit of the most extensive views and acquirements respecting the countries around him. And through the advantages conferred upon him by these attainments, under circumstances rendering their possession singularly appropriate and useful, he was appointed, in the short period of six years from his arrival in the East, and at the early age of thirty years, to the high and honourable station of representative of the British nation in the Indian Archipelago, as "Lieutenant-Governor of Java and its Dependencies."

Dr. Leyden had been appointed Surgeon and Naturalist to the Commissioners directed to survey the Mysore territories on the Indian peninsula, which had been recently conquered from Tippoo Sultan. In this service, however, his health had become so greatly impaired, that he was obliged to leave the Commissioners, and at length, to facilitate his recovery, to make a voyage to Prince of Wales's Island, where he arrived on the 22d of October, 1805. Mr. Raffles thus acquired a congenial friend, and they were quickly united by a close intimacy, the effects of which on the pursuits of the former we have just described. The peculiarities of the Malay race attracted the eager attention of Dr. Leyden; in order to extend his knowledge of their language,



their manners, and their religion, he visited various places on the neighbouring coasts; and the information thus collected he afterwards presented to the Asiatic Society of Calcutta, under the form of a "Dissertation on the Languages and Literature of the Indo-Chinese Nations," which was published in the tenth volume of the *Asiatic Researches*. Having pursued these researches in conjunction with Mr. Raffles, to whose mind he thus gave an impulse it ever afterwards retained, his health was speedily renovated by the comparatively salubrious climate of the Island, and the kind attentions of the friends he gained there. In the beginning of 1806, he proceeded to Bengal, addressing to Mrs. Raffles, under the name of Olivia, some beautiful verses, entitled, the "Dirge of the Departed Year," in which he attributes his recovery, in part, to her friendship and kindness.\*

Having now conducted Mr. Raffles to his station in the Malayan regions, it will obviate the necessity of giving and repeating, as we proceed, many explanations relative to the geography and history of the different countries they comprise, if we take a general view of the situation and character of these countries, at this early stage of the memoir.

\* Poetical Remains of Dr. Leyden; with Memoirs of his Life, by the Rev. J. Morton, p. xxxv, et seq. and p. 170.

Some incidents of Dr. Leyden's early history assume a character of great interest, when we survey the mighty advance of science and of knowledge in general at the present time, and the individuals who have taken a distinguished part in promoting it. Whilst at the University of Edinburgh, for example, he became one of the founders of the "Academy of Physics," in conjunction with Mr. Brougham; Dr. Birkbeck, the Founder and President of the London Mechanics' Institution; the late Mr. Horner; Dr. T. Brown, Professor of Moral Philosophy in the University of Edinburgh; Mr. Jeffrey; and several other gentlemen, at that time his fellow-students in the University, but who have since attained the highest rank in their respective pursuits, and been most active in the diffusion of knowledge. The first Edinburgh Review was established about the same time, and the members of the Academy of Physics, who were accustomed to draw up abstracts of new publications on science, were among the earliest contributors to that work. It is always pleasing thus to cast a retrospective glance on the associations of those characters, who have become eminent in society, that were formed at an age when they were susceptible of the strongest impressions, from the genius and example of each other.

The peninsula of Malaya, or Malacca, as it is sometimes denominated, from the metropolis of the country, is the westerly and most extended branch of the greater peninsula, which consists of the Birman, Siamese, and Cochinchinese states. It forms the southernmost extremity of the Asiatic continent, extending to within about 45' of the Equator; being washed, on the west, by the straits of Malacca, separating it from Sumatra, with the general range of which island it forms a small angle, and towards the east by the Gulf of Siam and the Chinese Sea. The commercial emporium of *Zaba*, celebrated by the ancients, which was a place of great importance in the time of Ptolemy, and for many ages subsequently, was situated in Malaya, at a place upon the river Jehor, near the southern termination of the country, now called Batu Sabor. The peninsula, with some of the adjacent islands, formed one of the states to which the appellation of *Maharaja* was anciently given in the East. In after times it became the principal seat of the Mohammedan Malayan Empire, which was in its greatest splendour during the ninth century; being dismembered many ages before the country was visited by Europeans. As already intimated in the Introduction, the Malayan states and the islands of the Indian Archipelago in general, were first discovered and frequented by the navigators of Europe, about the same time that America became known to them; and the city of Malacca was conquered by the Portuguese general, Albuquerque, in the year 1511, from which period it became an European settlement, passing from the hands of the Portuguese, into those of the Dutch and the English, successively.

The most extensive group of islands in the world, termed the Indian Archipelago, and also, by some geographers, the Asiatic Isles, occupy the intervening space between the south-eastern countries of the Asiatic continent, and the north-eastern coast of New Holland. They thus form, as it were, a continuation of the land, in a south-easterly direction; connecting the shores of China and of the further Indian peninsula, with those of Carpentaria, the land of Arnheim, and De Witt's land in New Holland. Comprehended within the 90th and 150th degrees of east longitude, they are included, with the exception of the northerly

Phillipine Islands, within about ten degrees of latitude on each side of the equator. The three largest islands of the group, Borneo, New Guinea, and Sumatra, are also, next to New Holland, the largest islands on the globe.

In geological constitution, and in the resulting characters of the soil and organic productions, the Asiatic Isles may be said to consist of two minor groups, the one of primary, the other of volcanic formation. From the vast chain of primary mountains, called the Himalaya, the position of which has been stated in the Introduction, proceed many subordinate ranges, two or perhaps three of which form the geological bases of both the Indian peninsulas. One of these traverses Hindûstan, and terminates in the Island of Ceylon, whilst the other, extending through Aracan, Pegu, the Birman empire, and Malaya, disappears at the southern extremity of Sumatra, but first sending off an inferior ridge through the smaller islands of Banca and Biliton. Borneo and Celebes appear to be the continuations of another great branch of the Himalaya, nearly parallel to the former, from which, indeed, it may possibly arise. Java, however, though separated from Sumatra only by the narrow straits of Sunda, is entirely of volcanic constitution. It deviates also from the south-easterly direction of Sumatra and the Malay peninsula, by striking off nearly due east and west, being succeeded by the isles of Bali, Lombok, Sumbawa, Endi, Timor, and many smaller, which agree with it in geological character, and are connected by the volcanos of Banda and the Molluccas, with those of the Phillipine group. An immense volcanic chain is thus formed, which first bounds the Indian Archipelago towards the south, extending eastward for about twenty-five degrees, and then intersects it in the direction of its greatest width from south to north.

A corresponding distinction is observable between the characters of the nations respectively occupying these two groups of islands. The primary tracts of which the Malayan peninsula consists, together with the isles of Sumatra, Banca, Borneo, and Celebes, being rich in the metals and the precious stones, are inhabited by commercial and warlike people. The volcanic range, on the contrary, destitute of the metals, &c. but from the nature of its soil, arising from the decomposition of lava, sustaining the most luxuriant

vegetation, is peopled, especially Java, by an agricultural race ; and has been celebrated, from time immemorial, for the high degree of cultivation which its plains have received. From the situation, however, of nearly all the islands, within ten degrees of the line, one constant summer prevails throughout the Archipelago : the evergreen islands rise in endless clusters from the smooth seas that flow around them : innumerable flowers bloom in perpetual succession throughout the year, impregnating the air with their fragrance ; whilst the variety and abundance of indigenous fruits and spices is so great, as to have obtained, for the entire insular assemblage, the emphatic appellation of “ The Garden of the World.” Nor are the productions of animated nature less abundant, or less various and beautiful ; possessing the more useful and more curious animals of continental India, the Asiatic Isles are distinguished by many animals, of every class, peculiar to themselves, as we shall hereafter be called upon to particularize.

The political or rather national history of the Indian Archipelago, has claims to interest commensurate with those enjoyed by its natural peculiarities and advantages. Presenting all that is majestic and lovely in nature, it appears to have been peopled, at a remote period, with inhabitants professing the Hindû faith in its more simple and more elevated form. The maritime districts in some of the islands, were, in after times, colonized by the enterprising Arabs, who founded the Malayan empire properly so called. Before the prowess of these Mohammedans, the former inhabitants, greatly diminished in numbers, withdrew into the interior fastnesses of the country ; or in many instances gradually lost all traces of their ancient greatness, and all remembrance of their pristine religion ; leaving their magnificent temples, many of them equalling in architectural splendour those of Hindûstan itself, to the destructive influence of the elements, and of the luxuriant vegetation, which, in these climates, so quickly overspreads and dilapidates every neglected edifice.

The Malays, properly so called, inhabit the Peninsula of Malacca, with the coasts and maritime districts of the islands lying between the Phillipines and the Southern Ocean, which are bounded in longitude by the western coasts of Sumatra

and New Guinea; the only instance of a Malay government in the interior of the islands, being presented by the state of Menangkabau in Sumatra. The dialects of the Malay tongue, have, in the course of ages, undergone changes which render them, with respect to the purposes of intercourse, distinct languages: yet, when strictly examined, the *Maláyu* nation may be regarded as one people, speaking one language, and preserving the same character and customs, though spread over so wide a space. The descendants of the ancient Hindû inhabitants of the islands, on the contrary, have languages peculiar to themselves; and are governed by their own respective laws and institutions.

“There is something in the Malayan character,” observes the subject of this memoir, in his introduction to Dr. Leyden’s translation of the Malay Annals, “which is congenial to British minds, and which leaves an impression, very opposite to that which a much longer intercourse has given of the more subdued and cultivated natives of Hindûstan. Retaining much of that boldness which marks the Tartar stock, from whence they are supposed to have sprung, they have acquired a softness, not less remarkable in their manners, than in their language. Few people attend more to the courtesies of society. Among many of them, traces of a higher state of civilization are obvious, and where opportunity has been afforded, even in our own times, they have been found capable of receiving a high state of intellectual improvement.”

Java and Sumatra having been successively the seats of Sir Stamford Raffles’s authority in the Indian Archipelago, will each claim a more detailed notice, as we proceed. But it will be useful to complete this sketch of the Malayan countries, by some particulars of the other two larger islands of the group, with which Europeans have been principally connected;—the islands of Borneo and Celebes.

Borneo, it has been remarked, embanks the navigable pathway between the eastern and western hemispheres, and lying contiguous to China and Japan, the most populous regions of the globe, its inhabitants were once engaged in extensive commercial relations with those countries. It stretches from the 4th degree of south to the 8th of north latitude, and from east longitude 150°

to 158°; being about seven hundred miles in length and five hundred in breadth, having a greater superficial extent than any country of Europe. All its rivers take their origin from a large inland lake, which waters an extensive district of mountainous or rather of table land. It is rich in gold and diamonds, and is also extremely fertile, though, from the degraded condition of the people, at present very unproductive in cultivated vegetation. The Dayaks or aboriginal inhabitants, are a very singular race; distinguished by the rude virtues of which even the most savage of mankind are rarely destitute, but also by the perpetration of human sacrifices, to obtain the victims for which predatory expeditions are perpetually undertaken. And, divided into numerous tribes, no person among them is permitted to marry, until he can present the head of some individual of another tribe, to his proposed bride, who then is not allowed to decline the alliance.

Celebes is as remarkable in geography for its peculiar lobate figure, as it is in history for the martial enterprise of the natives, and the rude mixture of honour and integrity with extreme ferocity and delight in carnage, that their character presents. Many of the tribes, called Bugis, served the surrounding states as military retainers; with the same courage and fidelity as the Normans, at a former period, and the Swiss, in later times, fought the battles of the European sovereigns. On the other side of the picture we behold them scarcely refraining from cannibalism; and celebrating "the feast of the bloody heart," at which the raw heart and blood of a newly-killed deer are the favourite viands; and seem to be devoured in remembrance of some still more revolting festival.

We now return to the history of Mr. Raffles, having, by the preceding sketch, enabled the reader to appreciate the extent and character of the sphere of action, in which he was soon to be engaged. On the decease of Mr. Pearson, in March, 1807, he succeeded to the office of Secretary to the Government of Prince of Wales's Island; the Governor and Council, whose distinguished regard he had obtained, also uniting the duties of that station, as conferred upon him, with those of Registrar to their Recorder's Court.

Connecting with his official engagements, the studies, the his-

torical and national inquiries, to which we have adverted in a former page, the intense application of his mind to the whole, in a debilitating atmosphere, induced severe indisposition. This compelled him to seek change of scene, and he accordingly proceeded to Malacca, early in the year 1808. When his health had become in some degree re-established, he commenced an investigation of the history, the localities, and the resources of that settlement, which terminated in the first great service he performed to the authority of Britain in the Malayan states. For the result of his researches was the conviction, that Malacca was a place of much greater importance than had been conceived; and he found it incumbent upon him to prepare a Report upon the subject, for the information of the government of which he was an officer. In this report he pointed out the expediency of countermanding the instructions which had been issued, for the demolition of the fortifications at Malacca. This suggestion was taken into consideration, and finally adopted; and by the timely representation of other circumstances alluded to in the report, some of which, it would appear, had been unknown before, and others not duly appreciated, he was eventually the instrument of preventing the alienation of Malacca from the British Crown.

Pursuing with ardour his enquiries into the history, and past as well as present condition, of the nations by which he was surrounded, Mr. Raffles communicated to the Asiatic Society of Calcutta, in the course of the year 1810, a paper "On the Maláyu Nation; with a translation of its Maritime Institutions." It was afterwards published, in the year 1816, in the twelfth volume of the Asiatic Researches, to which it forms one of the most important contributions.

This paper, Mr. Raffles's first production in literature, we believe, commences with some remarks on the prevalent error of supposing that the Malays have preserved no written records of their usages and laws; and thence, after proceeding to define the extent of the *Maláyu* nation, and to shew that the various dialects of the language are not radically distinct, the author gives a general account of the proper laws and customs of the Malays, as they at present exist as a nation, which are independent of the laws of the *Korán*, and which are pre-

served in codes called *Undang Undang*, or Institutions. The paragraph with which this account begins, is so characteristic of the extensive views, by which the researches of the author were ever prompted, that it would be unjust to omit it in this analysis of the memoir.

“ Considering that a translation of these codes, digested and arranged according to one general plan, might be as useful in facilitating and ensuring a more secure intercourse among this extraordinary and peculiar nation, as it might be interesting in illustrating the unjustly degraded character of so extensive a portion of the human race, hitherto so little known either with respect to what they are or what they were ; I have long been engaged, as far as the severe duties of my public situation would admit, in collecting *Malay* manuscripts of every description, and in particular, copies of the *Undang Undang Maláyu*, which, with the various collections of *Addat*, or immemorial customs, and what may be usefully extracted from the *Sejáreh Maláyu*,\* and *Akal Maláyu*, or annals and traditions of the *Malays*, comprise what may be termed the whole body of the *Malay* laws, customs, and usages, as far as they can be considered as original, under the heads of government, property, slavery, inheritance, and commerce.”

Proceeding next to notice, *seriatim*, the respective *Undang Undang* of the different Malay States, both of the islands and the peninsula, the author presents an account of some of the distinct tribes inhabiting the latter; and also gives a Translation of a Malay historical narrative of the ancient relation between the state of Menangkabau in Sumatra, and that so called on the Malayan peninsula. This is succeeded by a translation of a Malay “ History of former times, containing an account of the first arrival of the Portuguese at Malacca.”

Returning to the subject of the *Undang Undang*, having before dismissed it, as far as relates to the *Maláyu* nation itself, Mr. Raffles notices the original institutions of the various nations among the Eastern islands, especially those of Java, and of the Bugis and Macassar states on Celebes. The consideration

\* A translation of the *Sejáreh Maláyu*, or Malay Annals, by Dr. Leyden, was published, in an octavo volume, in 1821, with an introduction by Sir S. Raffles.



of these subjects leads to some remarks on the comparatively modern origin of the Malays, who appear not to have existed as a separate and distinct nation, until the arrival of the Arabians in the Eastern seas: the memoir here terminates, and is succeeded by the Maritime Institutions, selected by the author, for the purpose of laying before the Asiatic Society, on account of their singularity and characteristic peculiarities.

About this time Mr. Raffles was appointed Malay translator to the Government of India, having been introduced to the Earl of Minto, the Governor-General, by his friend Dr. Leyden, who had become Professor of Hindûstani in the College of Fort-William at Calcutta. He soon obtained, and ever afterwards enjoyed, the highest regard and confidence of this nobleman. And His Excellency, in one of the Anniversary Discourses he delivered to the College, an establishment in which the education, in every branch of oriental learning, of those who are intended to occupy public stations in India, is completed, honoured Mr. Raffles's Malay pursuits with an especial notice, also announcing his being engaged in compiling a code of Malay laws.

But the era was now rapidly approaching, at which Mr. Raffles was destined to take a more prominent station in public affairs. He was present at Calcutta in 1811, during the time when the reduction of the Dutch settlements in the Eastern seas was contemplated by the Bengal Administration. The annexation of Holland to France, which had been effected by Napoleon, having virtually placed at the disposal of the latter power, all these valuable and extensive possessions, it was deemed expedient that the island of Java, which was the central seat of the Dutch colonial government, should, without delay, be brought under the dominion of Great Britain. Those gentlemen whose situations in the East had qualified them for the execution of such a task, among whom, of course, was Mr. Raffles, were accordingly requested by the Governor-General to furnish the best information they could impart, respecting the state of the Indian islands, on which the Dutch settlements were planted. In a short space of time, Mr. Raffles presented to Lord Minto, a memoir on this subject, which was found to be so superior in information to those

furnished by his competitors, so complete as far as accessible sources could supply materials, so well adapted in its plans to existing circumstances, and so masterly in political views, that the arrangements recommended by its author were adopted by the Government, with little or no variation: Pursuant to the scheme of action now determined upon, Mr. R. was appointed Agent of the Governor-General to the Malay States; and he proceeded to Malacca, where the proposed expedition for the conquest of the Dutch settlements was to *rendezvous*, on its route to Java.

The Armament was fitted out in the various ports of India, by the command of the Governor-General; it consisted, in vessels of all descriptions, both European and Native, of ninety sail; and it arrived in the straits of Malacca in the month of June, 1811. A difference of opinion existed as to the best course to be pursued: it was ultimately determined to follow that pointed out by Mr. Raffles, and the result was that the entire expedition reached the shores of Java without a casualty. Mr. R. proceeded thither with Lord Minto, in the official capacity above named, and also as his private secretary; together with Dr. Leyden, who having accompanied the Earl from Calcutta, was busied in the translation of the letters that had been received from the different Malay rajahs, and in dictating proclamations to send forward in the Native languages of the countries they were approaching. Early in August, the expedition appeared before the city of Batavia, the chief settlement of the Dutch in Java. On the 4th, the army landed at a village six miles to the eastward of Batavia, and in four days afterwards they entered the city, without meeting any resistance.

This epoch, however, though so propitious to Mr. Raffles in the complete success of the plan he had suggested for the reduction of the Dutch settlements, was yet marked as one of melancholy import to him. His friend Dr. Leyden, the promoter and associate of his early studies, the kindred genius whose congenial mind had united with his own to pursue the objects in which they were both so deeply interested, was seized with a violent fever, shortly after the landing of the troops. An illness of three days followed, and he expired in the arms of Mr. Raffles, on the 28th of August, at the early age of thirty-six; a victim to excessive exer-

tion and the pestilential climate of Batavia. "He came from the other India," as Mr. R. subsequently remarked, "panting after knowledge and busy in the pursuit of science;" he entertained a "confident hope of illustrating national migrations from the scenes which he was approaching, . . . but just as he reached those shores on which he hoped to slake his ardent thirst for knowledge, he fell;" deeply deplored by all, and by none more truly than by the subject of this memoir, who in company with the Governor-General, beheld the last sad offices performed over his mortal remains.

"His bright and brief career is o'er,  
And mute his tuneful strains;  
Quenched is his lamp of varied lore,  
That lov'd the light of song to pour;  
A distant and a deadly shore  
Has Leyden's cold remains!"

WALTER SCOTT.

But to resume our narrative: General Jansens, the Dutch Governor of Batavia, had withdrawn his forces from the city on the approach of the British troops, and retired to a strong position at Fort Cornelis, about five miles towards the interior of the country. Thither he was soon followed by the invading army, and after a hard fought battle, totally defeated. This conflict determined the fate of the Dutch settlements in the Indian Archipelago; and thus was achieved the conquest of Java; an island containing a population of five millions; and divided into thirty residencies, under powerful chiefs, all more or less subordinate to the European authorities. The unparalleled ease and celerity with which this object was effected, appears to have been mainly owing to the excellent arrangements made by the Governor-General and his coadjutors in the enterprise; which were carried into effect with consummate skill and gallantry, by Sir Samuel Auchmuty and the army under his command. The facility with which the new government was established, was also aided in a high degree by another circumstance, noticed by Mr. Raffles, in the preface to his History of Java, in nearly the following terms. The British, with respect to the colonists and the inhabitants,

came as friends to the Island. Holland had ceased to be an independent nation ; and for the time there could be only two parties, the one English, the other French. The emissaries of the late ruler of France had perverted the minds of the majority : many were doubtful on which side they should rally. At this critical juncture, Mr. H. W. Muntinghe, President of the Supreme Court of Justice at Batavia, and Mr. J. C. Cranssen, another principal civil officer of the Dutch, declared for England and the ancient order of things. To the influence of the decision and conduct of these gentlemen, is to be ascribed much of the cordiality and good understanding, which soon prevailed between the official representatives and settlers of the two nations ; and the Earl of Minto, with the wisdom and benevolence that characterized all his actions, constituted them members of the British Council in Java.

The value of the services which had been rendered by Mr. Raffles, as well in the preliminary arrangements of this fortunate expedition, as in the ultimate execution of the enterprise, was fully appreciated by the Governor-General. They were rewarded by his immediate nomination to the high and important station of " **LIEUTENANT-GOVERNOR OF JAVA AND ITS DEPENDENCIES ;**" . . . " as an acknowledgment of those services, and in consideration of his peculiar fitness for that office ;" Lord Minto deeming him the most proper person to be entrusted with the execution of that political system, which he had himself devised and recommended.

Accordingly, on the 11th of September, in the year 1811, the eminent character whose life we are recording, took charge of the government of Java.

Having thus attended Mr. Raffles to the commencement of his authority in Java, an authority productive of so many important consequences to the welfare of its inhabitants, as well as to the interests of all liberal pursuits connected with eastern Asia, we will pause awhile in our narrative ; for the purpose of contemplating the extensive and populous island consigned to his government.

Java is situated between  $105^{\circ} 11'$  and  $114^{\circ} 33'$  east longitude, extending eastward from the straits of Sunda, with a slight deviation to the south; and is included within  $5^{\circ} 52'$  and  $8^{\circ} 46'$  south latitude. Its length in a right line, measured from the south-eastern extremity, to the beautiful promontory towards the west, called Java Head, so well known to navigators as the first point made by vessels approaching the island from the southward, is 666 statute miles, its breadth varying from 56 to  $135\frac{1}{2}$  miles; whilst its area is equal to about 50,000 statute square miles. Its general figure is that of a parallelogram, or rather of several parallelograms of different proportions united; and its outline is so regular, that the island might be entirely divided into five or six parts of the same figure. On the southern and western sides it is washed by the Indian Ocean; on the north-west by the straits of Sunda, on the north by the sea of Java, which separates it from Borneo, and at the south-eastern extremity by the straits of Bali, only two miles wide, by which it is divided from the island of that name. Towards the eastern termination is the principal harbour, that of Sourabaya, formed by the approaching coasts of Java and the island of Madura. This harbour is very spacious, secure against the violence of the waves and the wind, and might be rendered impregnable to any armed force. No region in the world, probably, is better watered than Java, for though the size of the island does not admit the existence of large rivers, the streams in every direction are singularly numerous and useful. The scenery, especially in the interior and southern provinces, is bold in outline and prominent in its features; an uninterrupted range of large mountains, evincing their volcanic nature by their conical form, extend throughout the island, their summits being elevated above the sea from five, to eleven, and even twelve thousand feet. These romantic provinces, indeed, unite all the highly diversified and rich scenery, which waving forests, never-failing streams, and constant verdure can present; heightened by a pure atmosphere and the glowing tints of a tropical sun. And with respect to climate, it is now known, that, excepting a few places, extremely unhealthy from local causes only, which were most unwisely colonized by the Dutch, Java is equal in salubrity to the healthiest parts of British India, or indeed to any tropical region of the globe.

The geological character of the island, and the nature of the resulting soil, have been mentioned already when contemplating the peculiarities of the Malayan countries in general. The riches of Java belong entirely to the organic kingdoms of nature. Its vegetable productions are distinguished not merely by their abundance, but also by their extraordinary variety. For between the summits of the mountainous chain which traverses the island, and the sea-shore, six distinct zones, differing in climate, are produced, by the difference of elevation in a country so near the equator; each of which furnishes a copious indigenous botany; whilst, for the same cause, the productions of every region of the world may be cultivated in some district or other. All the tropical plants that contribute to the sustenance of man abound in perfection; nor is Java deficient in those more curious vegetable productions, which, though not so essentially useful as the former, are yet of considerable importance to civilized society. Among these are a shrub yielding caout-chouc or elastic gum, the wax tree, and a tree producing a substance which strongly resembles tallow.

The woods abound with timber-trees; and in the eastern provinces are extensive forests of Teak, which appears to exist, in the Malayan countries, only in Java and the islands further to the east, as it is not to be found on the peninsula of Malacca, in Sumatra, or in Borneo, and but very scantily on Celebes, where it does not seem to be indigenous. The Bambû, applied to so many useful purposes in all the eastern countries, appears to find in Java a soil and a climate more congenial to it than elsewhere, for it grows here in far greater luxuriance and variety. And turning to those remarkable plants which secrete a substance destructive of animal life, we find in Java and the easterly isles the celebrated Upas or Poison-tree, the history of which has given rise to a multitude of appalling, but fabulous narrations; together with a shrub, apparently peculiar to Java, which furnishes a poison still more virulent and rapid in its action.

Nor are the animal productions of this island less important, or in a scientific point of view less interesting: but as a future number of this work will contain a review of the contents of Dr.

Horsfield's Zoological Researches in Java, a very brief notice of them only is requisite at present. Java affords about fifty or sixty species of mammiferous animals, among which are a fine breed of small Horses, an equally valuable race of Buffaloes, and a Wild Ox, apparently a variety peculiar to Java; but not the Elephant, which is a remarkable fact, since that animal abounds in Sumatra. There are also several species of *Felis*, including the Tiger; the Jackal, and some species of Wild-Dog; the Rhinoceros; and many small quadrupeds, comprising some interesting genera which appear to be peculiar to the island. The number of Birds in Java, amounts to between three and four hundred species; and the *Amphibia* include the Cayman, a number of large *Lacertæ* and *Iguanæ*, several species of Turtle, some curious Batrachian reptiles, and numerous serpents; whilst the adjacent seas, the rivers, and the lakes, afford many species of esculent fish; and the extensive bays on the southern coast abound in the most beautiful tropical forms of Mollusca and Corals. Honey and wax are produced by three species of Bees, inhabiting the largest forests, though at present collected in very inconsiderable quantities; and the Insects of Java, in general, are proportionate in number and variety to its vegetable productions.

As neither the limits nor the chief object of the present memoir, will admit of a minute examination or detail of all the measures of Mr. Raffles's administration on this island, we shall notice only some of its more prominent features. It will be apparent from these alone, that no representative of the British nation in its distant possessions, ever displayed greater energy of character, or a larger share of benevolence, in performing the duties of so elevated a station. It will also be evident that none have better deserved the popularity, the discriminative and considerate praise of the most intelligent portion of the community, which was the reward of his public life.

The commencement of Mr. Raffles's official career as Lieutenant-Governor of Java, was disturbed by unavoidable hostilities with the treacherous chief of Palembang, the most powerful native state in Sumatra, and with the Sultan of Djocjocarta, one of the principal native authorities in Java itself. These powers were

quickly suppressed, and having thus successfully terminated the war, he was at liberty to investigate the internal resources of the island. This investigation he accordingly entered upon; and he also carefully examined the disposition and character of the inhabitants, with a view equally to the advancement of his country's interests, and the moral improvement of the natives and colonists. One of the principal means he devised for the preliminary arrangement of these and similar measures, was the reinstatement of a literary institution at Batavia, which had for some years been in a dormant state. This subject requires particular notice.

The first institution that was established by European colonists in any of their Oriental settlements, for the purpose of obtaining and communicating useful information on the surrounding objects of inquiry, or of pursuing those branches of science or of literature which might appear best calculated to promote the welfare of their colonies, was the Batavian Society of Arts and Sciences. This association was founded on the 24th of April, in the year 1778, through the exertions of M. Radermacher, a zealous promoter of useful knowledge at Batavia, and son-in-law to the Dutch Governor-General M. De Klerk.\* The objects of research first

\* The history of the learned societies formed in the European settlements in India, presents one of the many instances of an example set by foreigners, being followed and improved to an indefinite extent by our own countrymen. The first association for the improvement of natural knowledge founded in Europe itself, was the Florentine *Accademia del Cimento*; the second was the Royal Society of London. So also in the East, the Batavian Society as above stated, was the first institution established for the promotion of inquiries into the history and learning of Asia; but the second was the Asiatic Society of Calcutta, founded six years afterwards by Sir William Jones. The services which the Asiatic Society has rendered to oriental literature, are too well known and appreciated to need remark in this place. Within the present century, similar institutions have been formed at the principal British residencies in Hindûstan; as at Bombay, the Literary Society of which settlement has published three interesting volumes of transactions; at Madras; and in Ceylon. Even the distant southerly regions of New Holland have the "Philosophical Society of Australasia," founded in 1822 by Sir Thomas Brisbane, and the "Agricultural Society of Van Dieman's Land." These associations, in conjunction with the more recently established Asiatic Societies of Paris and Great Britain, furnish such vast means of investigation in Asia, as will probably change the face of Eastern learning altogether.



proposed by this Society, embraced whatever could tend to improve the agriculture, the commerce, or the general welfare of the settlement. It also entertained and encouraged the solution of every question relating to the natural history, the antiquities, and the inhabitants of Java. In the year succeeding that of its foundation, the first volume of its "Transactions" was published at Batavia; and five volumes more, the whole containing much curious and interesting information respecting Java and the neighbouring islands,\* appeared in the course of the next thirteen years, the sixth being published in 1792. From this period, however, the Society languished, and became comparatively inactive. An attempt was made, in the year 1800, to renew its vigour, by some judicious alterations in its constitution and statutes, but with little success; the seventh volume of the Transactions, for which some materials were prepared, could not be completed, and the only additional communications the Society received, were those of Dr. Horsfield, an American naturalist, who had commenced his inquiries respecting the natural history of the island.

Such was the condition of the Batavian Literary Society, when Mr. Raffles assumed the government of Java. The utility of reinstating an association of this description, under all the circumstances of the settlement, at this eventful period, was immediately perceived by him. With his accustomed promptitude he accordingly revived the dormant energies of the members, became himself the President of the Society, encouraged and procured the contribution of papers to its Transactions, and, at the Anniversary-meetings, animated the members to renewed exertions, by luminous Discourses, in which he reviewed the past labours of the Society, and pointed out the objects still demanding their attention. In 1813, Lord Minto was requested to become the Patron

\* The Zoological reader will recollect that it was in the second volume of the Batavian Transactions, that Von Wurmb described the animal from Borneo, he believed to be the true Orang Outang, but which Geoffroy afterwards pronounced to be a distinct species of Ape, to which the name of Pongo, given by Buffon to a supposititious animal, was subsequently restricted by Cuvier. The late Dr. C. Abel, however, as we shall have occasion to notice hereafter, has stated the animal described by Von Wurmb to be identical with the Orang Outang recently captured in Sumatra.

of the institution, and the following extract from the address voted to his Lordship on that occasion, will evince the grateful sense entertained by the members, as well as the intrinsic value, of Mr. R.'s exertions in the re-establishment of the Society.

“ Reformed by his (the President's) genius and perseverance—guided by his talents and example, re-established on its original and extensive foundations, and enriched by the addition of a number of new and valuable members—the Society flatters itself that a new life and vigour will soon pervade its whole system, and that although the old trunk still remains, the grafting thereon of some new branches, transplanted from a rich and fertile soil, will shortly tend to produce a greater abundance of fruit and of finer quality than formerly.”

At the Anniversary-meeting in 1813, held on the 24th of April, Mr. Raffles delivered an address of which we shall now present a brief outline.

This discourse commences with a review of the progress of the Society, from its first institution down to the Anniversary; in which the principal contents of the first six volumes of its Transactions are noticed. Dr. Horsfield's labours in investigating the natural history of Java are then mentioned, and also the contents of the seventh volume of the Transactions just sent to press; and next, after an affectionate eulogy on his departed friend, Dr. Leyden, by whom the last article in the volume, a sketch of Borneo, had been prepared, during his passage with the expedition from Malacca to Batavia, the President proceeds,—regarding the demise of Dr. L. and that of Dr. Hunter, the late secretary to the Society, not as justifiable grounds for supineness, but as incentives to more strenuous exertion,—to point out the objects to which the attention of the Society should be directed. These it was evidently his design should be, the collection and arrangement of every species of information respecting Java and the adjacent countries, for the purposes, mainly, of obtaining the best data on which to found the improvement of the civil and moral condition of the inhabitants and settlers, and the advancement of the island's importance as a British possession. He accordingly directs the atten-

tion of the members, to the necessity of first attaining an accurate and extensive knowledge of the Javanese language, and of acquiring, for that and other purposes, a collection of native manuscripts, and fac-similes of ancient inscriptions. In advert- ing next to the future prospects of the Society, Mr. Raffles announces that the exploration of the island of Banca, which had lately fallen into our hands, and which had never been explored by Europeans, had been undertaken by Dr. Horsfield; and he also notices, with much commendation, Mr. Muntinghe's contributions on the native laws and institutions of Java, in force antecedently to the introduction of the Mohammedan faith.

The objects within the geographical limits to which the President wished to confine the especial labours of the Society—those of the “Further East,”—are next pointed out, and their peculiar claims to investigation discussed, in a very animating and a very philosophical manner. After noticing Sumatra and Banca, he dwells particularly on Bali, where the pristine Hindû or Bûddhaic faith of the Indian Archipelago is still prevalent; and he advances thence to Borneo, of which an interesting sketch is given, with many sagacious reflections on the moral condition and mental state, both of the aboriginal tribes and the Mohammedan inhabitants; together with suggestions as to the proper means for their amelioration, and the manner in which it should be attempted. Celebes next claims his attention, afterwards Gilolo; and he then alludes to the superiority of our information respecting the natural history of the Moluccas, over that which we possess of any other region of the East.

Adverting, in conclusion, to the rapid progress of the European settlements on the more southern parts of New Holland, and, successively, to the paucity of our knowledge respecting the Sulu isles, and that of Mindanawi, and the prospect of assistance in the Society's researches on the Japanese isles, afforded by a projected mission to Japan under Dr. Ainslie, the English Secretary to the Society—Mr. Raffles congratulates the members on the renewed activity of the institution, noticing their having undertaken to publish a Malayan edition of the Sacred Scriptures; and he finally avows his determination to forward their pursuits by every means in his power.

The address of which we have thus endeavoured to give an outline, occupies thirty-three pages in the Seventh volume of the Society's Transactions, which was printed at the government-press of Batavia, and published in 1814. The style in which it is composed is in some respects loose and inaccurate. It has also a character of verbose diffuseness, that tends to weary the reader, and—to hazard a conjecture on what may be termed the progress of the author's mind—it would seem that at this time he felt himself restrained, in the expression of his ideas, by a deficiency of suitable forms in general science and literature, adapted to receive and to transmit to the minds of others, the grand views and mighty projects which occupied his own mind, and thence panted to break forth in all their splendour. But these formal defects detract little from the substantial excellence of the discourse. It displays the germs of that comprehensive perception which marks the subsequent productions of its author: it evinces his skill in selecting for inquiry that part of any subject which was most essential to its correct examination: and it exhibits the wise method he always pursued of confining the attention of any agent he employed,—whether an individual or an association of individuals—to one grand object; without however actually excluding the consideration of minor objects, but concentrating the main energies of the agent on one desirable point, until that point had been secured.

The contents of the Seventh volume of the Batavian Transactions, thus produced under the auspices of the Governor, are uniformly of a highly respectable character. Some of them appear to be extremely important in a local point of view, others afford interesting contributions to general science, and when compared with the Memoirs published by the Learned Societies of Europe, they present only the imperfections which resulted, inevitably, from the distance at which the authors were situated from the central seats of knowledge. The perusal of the Eighth volume, published in 1816, leaves similar impressions on the mind; and it is perhaps the most valuable of the two. The papers it contains are preceded by the Preadent's discourse On the Sunda Isles and on Japan, delivered before the Society at a

meeting held on September the 11th, 1815, in celebration of the fourth Anniversary of the British establishment in the Eastern seas. This address is nearly thrice the length of the former, which it also excels in style and arrangement; and it indicates the acquisition by the author of more appropriate and copious means of expression than he had before possessed. Great warmth and tenderness of affection for his deceased friends is shewn at the commencement; and the body of the discourse displays his characteristic extent and precision of thought. We proceed to an analytical view of this composition:

An affecting religious tribute of grateful feeling and deeply-founded regard, to the memory of Lord Minto, the patron of the Society, and the tenderly-attached friend of the speaker, who had deceased in the interval since his former address, with some allusions to an affliction he had himself sustained, marks the beginning of this discourse. Having discharged this debt of gratitude, he proceeds immediately to notice the enquiries set on foot by the Society, and the objects that had received their attention, since he last addressed the members. Dr. Horsfield had by this time brought to a close his laborious exertions on Banca, and Mr. Raffles announces the collection by that naturalist, of the most complete information regarding the position, constitution, and productions of that important island; of which he next gives, from the materials so obtained, a concise, but at the same time comprehensive and satisfactory sketch. On dismissing this subject, he notices the additional knowledge which had recently been acquired, respecting the dialects, native character, and statistics of Borneo, as well as of its ancient extensive intercourse with China and Japan, with the former of which countries alone it is now connected. Resuming, from his former address, his observations on Celebes, he enters particularly into its civil and military history, describing that singular feature of the constitution of society among its inhabitants, perhaps without parallel in Asia, of an elective monarchy; limited by an hereditary aristocracy, exercising feudal authority over the lower classes and population, with whom they are at all times prepared to open a campaign.

Returning hence to Java, as the field of home attraction, the President "notices," as he modestly terms it, but in fact gives a masterly general view of, occupying one-third of the memoir, "The extensive traces of antiquity, foreign intercourse, and national greatness, which are exhibited in that island, in the numerous monuments of a former worship, in the ruins of dilapidated cities, in the character, the institutions, the language, and the literature of the people;" prefacing this investigation with some remarks on the natural history of Java. These subjects terminate with an account of the yet Hindû inhabitants of the Teng'gar mountains; and proceeding to mention the leading observations he had made on the island of Bali, now the only one in the Eastern seas in which Hindûism still prevails as the established religion of the country, Mr. Raffles alludes particularly to the peculiar and extraordinary character of the inhabitants, so widely different, as well morally as physically, from that of every other nation in the Archipelago.

The uniformity in habits and in language prevailing throughout the various nations inhabiting the southern peninsula of India, and the innumerable islands comprehended in the modern divisions of Polynesia and Australia, next claim the Governor's attention; and as a subject new to the historian, and not uninteresting to the philosopher, he endeavours to trace the sources on the continent of India, whence flowed the colonization and subsequent civilization of the Eastern Islands; and the periods when Hindû colonies were first introduced into the different states. Admitting the probability that the country lying between Siam and China was the immediate source of this emigration, he proceeds, with the view just mentioned, to divide the history of the Eastern Islands, with reference to the island of Java in particular, on which a powerful Hindû government was early established, into five distinct periods; the first of which includes the period beginning with the earliest account of the population, and descends to the first establishment of a foreign colony in Java, mentioned in the written annals of the country, or A. D. 600; when only the period of authentic history can be regarded

as commencing. The progress of this historical sketch leads to the following observations on the *Taprobâne* of the ancients.

“ Sumatra was long considered the *Taprobâne* of the ancients, and when we advert to the single circumstance that this was said to be a country in which the North Polar Star was not visible, or only partially, we must still doubt the correctness of the modern conclusion in favour of Ceylon. The Eastern Islands furnish that peculiar kind of produce, which has from the earliest times been in demand by continental nations, and the same avidity with which in modern days Europeans contended for the rich products of the Moluccas, in all probability actuated, at a much earlier period, adventurers from Western India. Traces of intercourse with Ethiopia may be found at this day in the woolly-headed race peculiar to Africa; which are to be found on the Andamans, on the southern part of the further peninsula, and throughout the archipelago;\* and that the Hindûs were at one period an enterprising and commercial nation, may I think be established with little difficulty, from the incontestible proofs which at this day exist in Java; and the traffic which still exists in native vessels and on native capital between the Coromandel Coast and the Malayan peninsula. If any country therefore lays claim to this distinction more than another, it is Java:—but probably it was rather to the Eastern Islands generally than to one island in particular, that the appellation was given:—both Ptolemy and the Arabians would seem to have designated the islands by one general name—by the one they were termed *Jabadios Insule*, by the others *Javû* or *Jawa*, hence probably the confusion in the travels of *Marco Polo*, and the still disputed question between *Java Major* and *Java Minor*.”†

He then pursues this sketch or *programme* of the history of Java through the intervening divisions, to the last, which is comprised between the years 1600 and 1811, the former being

\* Some remarks on this curious point in the natural history of the human species, viz. the existence of a woolly-headed race in the south-eastern countries of Asia, will be found in a subsequent page of this memoir.

† We shall have occasion, when giving an analysis of Mr. Raffles's History of Java, to notice particularly the different opinions that have been entertained as to the country designated *Taprobâne* by the ancients.

the date of the establishment of the Dutch in the Eastern Seas, and the latter that of the British conquest. The subject of Java is concluded with some remarks on the striking resemblance between the early state of Greece and that of the Malay Islands, arising in part from the similarity in geographical disposition of the two countries; and also on the comparative elevation in national character of Java and the other islands, from which it appears that the people of Java had attained a far higher degree of civilization than any other nation in the Southern hemisphere.

The return of the mission from Japan enables Mr. Raffles to give some novel information respecting the character and habits of the extraordinary people of that country, confirming in every respect the accounts of the celebrated, but in Europe greatly maligned Kæmpfer, whose work however is held in high estimation by the Japanese themselves; and refuting the misrepresentations of other authors which have obtained such general credence. The most remarkable feature the statement affords, is the condition of high civilization of the people of Japan, and their still progressive improvement; whilst their neighbours the Chinese, with whom, as to intellectual and moral character, they are so frequently but so inaccurately ranked, have continued stationary, certainly for the few centuries during which we have known them, and as their history and works indicate, in all probability for many ages before.—Observing that the Japanese “are wonderfully inquisitive in all points of science, and possess a mind curious and anxious to receive information, without inquiring from what quarter it comes,” Mr. Raffles now terminates his address with this noble and animating expression of liberal feeling:—“In the same spirit let us hope that now, when

That spell upon the minds of men  
Breaks, never to unite again;

no withering policy may blast the fair fruits of that spirit of research which has gone forth from this Hall; nor continue, under any circumstances, to shut out one-half of the world from the intelligence which the other half may possess.”

[*To be continued.*]



ART. II. SUPPLEMENT to the GENERA of NORTH AMERICAN BIRDS, and to the SYNOPSIS of the SPECIES found within the territory of the UNITED STATES. By CHARLES LUCIAN BUONAPARTE, Prince of Musignano, M. A.; Vice-President of the Maclurean Lyceum of Philadelphia; Mem. of the Phil. Soc. of Phil.; of the Phil. Soc. of the State of New Jersey; of the Ac. of Nat. Hist. of Phil.; of the Lyceum of Nat. Hist. of New York; of the Ac. of Arts & Sc. of Baltimore; of the Ac. of the Ardenti, &c. &c.

I WAS far from supposing, that after having so carefully investigated the Ornithology of the United States, I should find in London, during a momentary stay, not only some of the most rare and interesting North American species, of which I never was able to procure specimens, but even some valuable additions to the Fauna of that country. To the kindness of Mr. Leadbeater, so well known among Ornithologists, I am indebted for the opportunity of examining and describing the following species, which I noticed on account of their being North American, among the great number of new and rare birds collected by him from all quarters of the globe.

1. CATHARTES CALIFORNIANUS. A specimen from the Oregon, the second known in any collection.

61. CORVUS COLUMBIANUS. A beautiful specimen from the same river, probably the only one in the possession of civilized man, the wretched specimen brought by Lewis and Clark excepted.

188. FRINGILLA VESPERTINA. Two perfect specimens of this highly beautiful bird, of which a single imperfect one had hitherto been known, upon which Mr. Cooper, of New York, established the species. These two specimens were shot early in the spring, on the Athapescow Lake near the Rocky Mountains.

301. *RALLUS NOVEBORACENSIS*. (*Rallus flavicollis*, Vieill. *Gal. des Ois.*\* pl. 266.) A male and female from the same locality, whilst the species had hitherto been found in the immediate vicinity of New York only.

The above four species are enumerated in my Synopsis, or in my Catalogue of the Birds of the United States; but the four following being completely new additions, we shall characterize them, pointing out the place they ought to occupy in our Synopsis, &c.

---

## GENUS XI. CORVUS.

### SUBGENUS III. GARRULUS.

63. bis. *CORVUS STELLERI*, Gm. Crested, blue; head and neck blackish; secondaries and tail-feathers, slightly banded with black, tail rounded.

#### SYNONYMES.

*Corvus Stelleri*, Gm. *Syst.* i. p. 370. *Lath. Ind.* i. p. 158. sp. 20.

Steller's Crow. *Penn. Art. Zool.* ii. sp. 139. *Lath. Syn.* i. p. 387. sp. 21. *Lath. Gen. Hist.* iii. p. 56. sp. 58.†

Inhabits the western coasts of North America, especially the

\* I shall take this opportunity to state, that in the above quoted most excellent work, only lately fallen under my notice, I find the *Phalaropus Wilsonii* of Captain Sabine (See my remarks on that genus, in my "Observations on the Nomenclature of Wilson's Ornithology," and in the second volume of the "Annals of the New York Lyceum of Natural History,") accurately figured plate 271, under the name of *Ph. frenatus*. M. Vieillot received his specimen from New York; and having probably referred as well as ourselves to the Albany Museum, he perceived that it was the supposed *Ph. lobatus* of Mr. Ord; but at the same time overlooked Captain Sabine's description of this truly unfortunate species, among the numerous synonymes of which his name will be condemned to figure.

† Latham in this late work, erroneously quotes under this species, the *Corvus Floridanus* of Bartram, (*Garrulus cyaneus* and *cærulescens*, Vieill.) which is a distinct species, Sp. 64, of my Synopsis.

shores of the Oregon, and Nootka Sound.\* Found also in Mexico.

GENUS XII. BOMBYCILLA.

65. bis. BOMBYCILLA GARRULA, Vieill. Drab; throat; frontlet and line over the eye, black; belly cinereous, vent rufous; wings and tail blackish, the latter tipped with yellow.

SYNONYMES.

*Ampelis garrulus*, Lath. Syn. 2. p. 91. sp. 1. Gen. Hist. i. p. 838. sp. 1.

*Turdus bombycilla Bohemica*, Briss. ii. p. 333. sp. 63.

*Bombycivora garrula*, Temm. Man. d'Orn. i. p. 124.

*Le Jaseur de Bohême*, Buff. pl. enl. 261.

*Bohemian Chatterer*, Penn. Brit. Zool. i. sp. 112. t. 48. Lath. Syn. iii. p. 91. sp. 1.

Inhabits near the Rocky Mountains; for a long time well known in the north of Europe and Asia. The discovery of this bird in America may lead to a more perfect knowledge of its chief place of abode, whence at remote periods it migrates so irregularly.

GENUS XX. bis. CINCLUS.†

*Sturnus*, L. Gm. *Tringa*! Briss. *Motacilla*, Scopoli. *Turdus*, Lath.

*Cinclus*, Bechst. Cuv. Temm. Ranz.

*Hydrobata*, Vieill.

BILL moderate, slender, straight, compressed-subulate, feathered at the base; edges sharp, slightly incurved; upper mandible curved

\* It is a curious fact in Ornithological Geography, that the four Jays now known to inhabit North America, should be confined to a peculiar section of country; thus *C. Canadensis* is the northern Jay; *C. Floridanus* the southern; *C. cristatus* the eastern; and the present the western representative of the sub-genus.

† N.B. In our Analytical Table of North American Genera, this genus must take its place in the family of the *Canori*, between the two genera *Myiothera* and *Turdus*, and be thus characterized:

20. bis. CINCLUS. Bill subulate-compressed: tarsi smooth; heel naked.

at tip, slightly notched, somewhat obtuse; lower slightly recurved at the point: nostrils basal, lateral, concave, longitudinal, covered by a membrane: tongue cartilaginous, bifid at tip. TARSIS longer than the middle toe, smooth; feet naked; inner toe free, hardly longer than the hind one; lateral toes equal. WINGS short, rounded; spurious feather very short; second and third primaries longest. TAIL short.

FEMALE hardly differing in plumage from the male: young more tinged with reddish. Moults annually. Plumage impermeable (water-proof.)

Solitary. Lives near brooks and clear rivulets, diving and walking on the gravel bottom, often entirely under the water, which appears to be its favourite element. Feeds on aquatic insects, especially small crustacea. Builds in the vicinity of rivulets, hiding its nest carefully. Flight rapid, straight, skimming the surface of the water. Voice feeble, shrill.

Inhabits the north of both continents. Composed of but two intimately allied species, both probably Asiatic, though one is found in Europe and the other in North America. Remotely allied to the order *Grallæ* by its habits, (which are still more aquatic than those of true water-birds,) and by the nakedness that prevails around the head; but belonging decidedly to this family (*Canori*) where it is related especially to *Turdus*, *Myiothera*, *Saxicola*, &c.

Species 94. bis. CINCLUS PALLASII, *Temm.* Wholly dark cinereous.

#### SYNONYMES.

*Cinclus Pallasii*, *Temm. Man. d'Orn.* i. p. 177.

Inhabits near the Rocky mountains, on the Athapescow Lake, probably north-eastern Asia.

Obs. This species (which we do not hesitate in referring to Temminck's *Cinclus Pallasii*, notwithstanding its conjectured locality, which at first led us to consider it as new, under the name of *Cinclus unicolor*), is the more interesting, in as much as the European species was the only one well known of the genus, which I noted, in my "Observations on the Nomenclature of

Wilson's Ornithology," as one of the twenty-five European genera not found in America.\*

GENUS LXXVIII. bis. PHALERIS.†

N. B. In my analytical table of North American genera, this genus must take place under the three-toed section of the family of *Pygopodes*, between the genera *Uria* and *Mormon*, and be thus characterized :

78. bis. PHALERIS. Bill curved, compressed, longer than high ; nostrils half closed by a naked membrane, pervious.

*Alca*, L. Gm. Lath. Ill. Cuv. Vieill. *Phaleris*, Temm.

SP. 359. bis. ‡ PHALERIS CERORHYNCA, Nob. Blackish ; belly whitish ; a few slender, elongated white feathers from the corners of the eye and mouth ; bill smooth, surmounted at the base by a long obtuse horny process.

Inhabits the Western coasts of North America.

Obs. This new species, the third well known of the genus, from the remarkable anomaly of its bill may hereafter be considered by some Ornithologists as the type of a new genus, or at least a subgenus. Hence we have been induced to apply to it a specific name, which being compounded from the Greek might, with propriety, become generic.

I shall take this opportunity of noticing that in a collection of birds from Havanna, sent to Mr. Vigors by Mr. MacLeay, I have had the pleasure of finding a beautiful specimen, apparently a male, of the new species of Dove, which I lately established under the name of *Columba Zenaida*, from a single female specimen from the Florida Keys. The range of the species thus appears to be not so limited as might have been supposed.

\* The two species of the genus may thus be characterized in the General System of Ornithology.

1. *Cinclus aquaticus*, Bechst. (*bicolor* Vieill.) Cinereo-brunneus, pectore albo. Habitat in Europâ et Asiâ Boreali.

2. *Cinclus Pallasii*, Temm. (*unicolor*? nob.) Fusco-cinereus, pectore concolore. Habitat in Americâ. (*an quoque*, Asiâ?) Boreali.

† By the additions of three genera (*Cinclus*, *Aramus*, *Phaleris*,) our North American genera are carried to eighty-three, which, instead of eighty, ought to be the number of *Alca*.

‡ Making the whole number of North American species, 366. (*Alca torda*.)

ART. III. *On the Esquimaux Dog*. By J. G. CHILDREN,  
Esq. F. R. S. L. & E. F. L. S. &c.

M. M. GEOFFROY SAINT-HILAIRE and Frédéric Cuvier, have given in their superb work, *L'Histoire Naturelle des Mammifères*, Livraison XII. a description and plate of a Dog, under the denomination of *Chien des Esquimaux de la Baie de Baffin*, the mother of which they inform us, was obtained through the kindness of Dr. Leach. "Nous devons ces précieux animaux à M. le Docteur Leach, qui, en ayant obtenu une femelle pleine, au retour de l'expédition du Capitaine Ross, a bien voulu nous l'envoyer. Cette femelle a mis bas trois petits, un mâle et deux femelles, qui suffiront sans doute pour nous conserver une race dont l'intelligence et la force, appliquées à nos besoins domestiques, pourront nous rendre d'utiles services. Aucune de nos races de Chiens, qui se rapporte à celle-ci, ne sont aussi belles et aussi fortes."

The figure is that of the young male whelped at Paris.

The learned authors of the *Mammifères*, evidently consider this animal as representing the genuine Esquimaux Dog; but it appears from Captain Sabine's remarks in his Supplement to the Appendix of Captain Parry's Voyage in 1819—20, that the puppies which were born at Paris, were the spurious issue of a male Newfoundland Dog and the female of the true Esquimaux race, presented to the French naturalists by Dr. Leach. "By an omission, doubtless of inadvertency, the keepers of the menagerie were not apprised that the female in question was with young by a Newfoundland Dog belonging to an officer of the *Isabella*; and it has unfortunately happened, that the plate of the 'Chien des Esquimaux de la Baie de Baffin,' as well as the minute measurements and description in the letter-press, are taken, not from the mother, but from one of the young, after it had attained its full growth; and it is not therefore a representation of a genuine Esquimaux Dog, as the authors designed." *App. Mammalia*, Art 4. *Canis Lupus*. p. 186.

Under these circumstances we have gladly embraced the op-



*Esquimaux Dog.*





portunity afforded us by the kindness of Lieut. Elliot Morris, R.N. of giving an accurate figure (Plate I.) of an unquestionably genuine male Esquimaux Dog, brought from the Polar sea by Mr. Richards, in Captain Parry's first Voyage, and by him presented to his friend Mr. Morris, in whose possession the dog still remains.

The dimensions of *Akshelli* (so the Esquimaux had named this animal) are as follows—

Length from the occiput to the insertion of the tail .	28 Inches.
from the occiput to the extremity of the nose	11
tail (about) .....	18
ears .....	3
from the eyes to the point of the nose .....	4
Breadth between the ears .....	4½
Height from the ground to the top of the shoulder....	24

The ears are erect and pointed, the tail very full, and thickly covered with very long hair, and curled, towards the right hand, over the back. The legs are very stout. The hair on the body and legs is rather long, very thick, soft, and somewhat woolly—its colour above is nearly black—the forehead is black, with a white streak down the centre, from the top of the head nearly to the extremity of the nose—over each eye is a white spot—the lower part of the face, the chin, belly, legs, and feet are white. The tail is blackish above, from its insertion to about five inches from the tip, which with the whole of the under side is white.

Such are the colours and markings of the Dog before us, but like those of most other domesticated animals, they are of course very liable to considerable differences in different individuals.

*Akshelli* is good humoured, but rather impatient of restraint, and seems particularly to dislike being examined about the head, snapping at my hands somewhat angrily, on my applying the rule to measure its length. He seldom barks, but if displeased utters a low wolfish growl. He takes very little notice of strangers, and is of no use whatever as a guard. He feeds on carrion, and prefers raw flesh to such as has been cooked. The strength of this dog is very great; when taken from his kennel, he appears extremely anxious to get at liberty, and when held back by his chain and collar, exerts himself with great power, increasing his

efforts in proportion to the resistance that restrains him. A stout Boy of fourteen, servant to Mr. Morris, was unable, when the dog exerted his utmost strength, to hold him back ; the animal dragged him forward several paces, in spite of all his efforts to prevent it.

J. G. C.

ART. IV. *Observations upon Siagonium quadricorne of Kirby, and on other portions of the Brachelytra* (Staphylinus, Lin.) *By* Mr. J. O. WESTWOOD.

[To the Conductors of the Zoological Journal].

GENTLEMEN,

If the following observations on the above singular and (till lately) extremely rare Insect, and on other Insects belonging to the Linnean genus *Staphylinus*, should be thought worthy of insertion in the Zoological Journal, by permitting them to occupy a place in its pages, you will oblige,

Gentlemen,

Your most obedient Servant,

JOHN O. WESTWOOD.

CHELSEA.

Order. COLEOPTERA. Lin. (See Note I.)

Tribe. CHILOPODOMORPHA. MacLeay.

Stirps. BRACHELYTRA. Latr.

Family. OMALIDÆ MacLeay, Ann. Jav. *Applatis* Latr.

Genus. OXYTELUS. Grav.

Sub Genus. SIAGONIUM. Kirby. Prognathe\* Lat. Fam. Nat.

Species. QUADRICORNE. D°.

IN the course of the last autumn, I had the good fortune to capture this insect in large quantities, under the bark of felled and de-

\* There is a sufficient difference between the names *Siagonium* and *Siagona* (a genus of Carabidæ), without incumbering our Nomenclature with another generic name for these insects.

caying trees in Kensington Gardens ; but by far the greater portion of them were females, their number exceeding that of the males, in the proportion of, at least, five to one. These last, although differing much in size, were, (contrary to the rule commonly observable in insects) all larger than the females ; this however is well ascertained to be usually the case with the generality of insects whose males have the head or other parts of the body, furnished with horns—but amongst the specimens of that sex there were very few in which the horns of the head were fully developed ; but where this was the case, these perfect specimens (if I may be allowed to apply this term to insects already in their perfect state), were much larger than the others—(See Note 2.)

The colour of the thorax and elytra of the females varied from bright chesnut almost to black.

On loosening a portion of the decayed bark, it is surprising to observe the facility and quickness with which these minute creatures again shroud themselves under that which remains, but which still firmly adheres to the trunk, and this is rendered still more curious when the slowness of the insect's motions is attentively observed ; it is however easily accounted for, when we notice the extreme flatness of the body and the strength of the legs.

I have been informed by several gentlemen who took them in Kensington Gardens in the course of last year, that (like many of the *Staphylinidæ*) they may be found throughout the season. H. Griesbach, Esq. also informs us, that he found them in profusion in similar situations in Windsor Park, during the summer, and I believe Mr. Denny took them in Norfolk about the same time. I have also since met with them in Lord Spencer's Park, near Wimbledon, Surrey.

It may not be unworthy to remark, that wherever I have discovered the perfect insects I have also found a quantity of small larvæ, and which I have little doubt are the young of the *Siagonium*, in which opinion I am confirmed by a remark of Latreille (Regne An. iii. 218), who says, “ Ces larves se nourrissent des mêmes matières que l'insecte dans son dernier état.” They do not, however, exactly agree with the characters of the Staphylinidous larvæ, as described by this author in the work quoted, and

therefore I do not hesitate from the attention at length bestowed on the larvæ of Coleoptera, to subjoin a description of one of them.

*Siagonium quadricorne*. (Plate II.) Fig. 1. A. Larva aucta.

Larva elongata, depressa \* albo fuscenscens. Corpore segmentis duodecim, transversis, sub-pilosis; mediis latoribus; ultimoque in medio in tubum depressum producto, et processibus † duobus lateralibus, tubo caudali longioribus, biarticulatis, instructo; articulo primo longissimo, tenuique; articuloque secundo minuto, brevissimo; (Fig. 1. B).—

Caput horizontale. Antennæ triarticulatæ? Articulo 1<sup>mo</sup> crasso, cylindrico; 2<sup>do</sup> maximo, securiformi, setis duabus latere interiori instructo; 3<sup>o</sup> que minuto, clavato—(Nota. Si articulus alius, brevissimus est et basalis.) Pedes breves, Tarsis exarticulatis unguiformibus.—(Fig. 1. C. pes anterior).—

*Habitat* sub cortice arborum emortuarum.

This description of the Larva of *Siagonium* may serve as the type of MacLeay's family *Omalidæ*; and in order to show the differences existing between the Larvæ of this and another of his families, I here subjoin a description of one which I had conceived to be the young of *Goerius olens*, but which Mr. Kirby recognized as belonging rather to *Philonthus politus*, or one of its affinities, and which will serve as the type of the larvæ of the family *Staphylinidæ*, as restricted by Mr. MacLeay in the *Annulosa Javanica*.

*Philonthus politus*? Larva aucta. (Fig. 2. A.)

Larva elongata postice attenuata, capite truncoque nigris, abdomine griseo nigroque vario, antennis pedibusque pallidis.

\* Latreille observes on the *Brachelytra* (Regne An. iii. 217) "Leurs larves ressemblent beaucoup à l'insecte parfait;" and Messrs Kirby and Spence (Introd. iii. 109) have made a similar remark.

† Latreille calls these "deux appendices coniques et velus." In all the *Staphylinidous* larvæ I have yet seen, they certainly cannot be said to be "velus," a few hairs only being visible on their surface. For the use of these anal processes consult the chapter on Larvæ, in the 3d Vol. of Kirby and Spence's Introduction.

Fig.1.

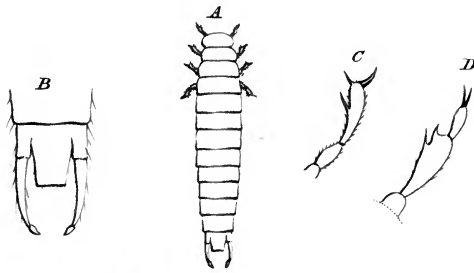


Fig.2.

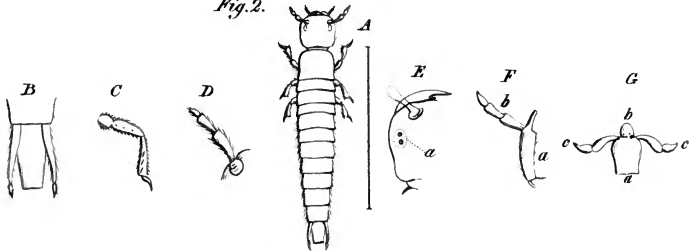


Fig.3.

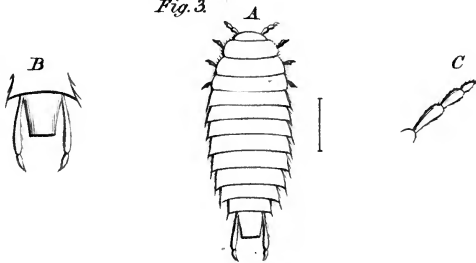


Fig.4.

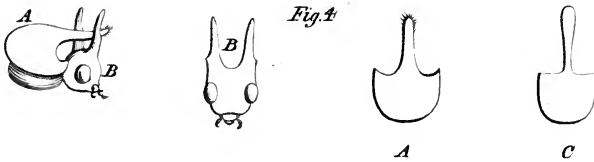


Fig.5.



Fig.6.



Fig.7.



Fig.8.



Fig.9.



*Caput* magnum, porrectum, quadratum, depressum et in collum brevissimum postice contractum.—(E, portio capitis.)

*Mandibulæ* elongatæ, corneæ, forcipatæ, et acutæ.

*Maxillæ* submembranaceæ; in scapum mobilem? sedentes; elongatæ tubiformes, apice in processum tenuiorem productæ, (F. a.)

*Palpi maxillares* triarticulati, duobus primis clavatis, ultimo ovato acuto minori. (F. b.) *Mentum* minutum, quadratum, submembranaceum (G. a.) *Labrum* minutum membranaceum (G. b.)

*Palpi labiales* mento longiores articulo 1<sup>mo</sup> longiori, et vix clavato 2<sup>ndo</sup> vel ultimo vix truncato (G. c.) *Oculi* quatuor? minutissimi, in tuberculis duobus lateralibus ovatis, locati. (E. a.) *Antennæ* capitis longitudine, ad basin mandibularum insertæ, 4 articulatae, articulo 1<sup>mo</sup> minuto 2<sup>ndo</sup> et 3<sup>o</sup> elongatis, clavatis; 4<sup>o</sup> tenuiori, breviroque (D).

*Corpus* elongatum, sub-depressum, segmentis 12 transversis, subpilosis, lateribus, deflexis; Segmento 1<sup>mo</sup> majori, capite non latius, margine anteriori rotundato. Segmenta 1<sup>a</sup>, 2<sup>a</sup> & 3<sup>a</sup> coriacea sunt et micantia et imaginis truncum exhibent. Segmenta alia carnosa sunt. Ultimum vel caudale (B) tubum centralem, deflexum (corpus sustentantem) exhibet; longitudinis ferè processuum lateralium. *Processus laterales* ut in Siagonio, articulo 2<sup>do</sup> minuto;—*Pedes* ut in Siagonio, (C)—*Tarsi* articulo unico in setis vel unguibus duabus, minutissimis desinente.

Habitat in Stercore, tempore vernali.

Gravenhorst (Coleopt. Micropt. Pref. lxi) after stating the difficulty of attending to the manners, &c. of these Larvæ at different periods of their life, observes that he has occasionally found the solitary black Larvæ “Speciei cujusdam majoris Staphylinorum (S. Olentis? S. similis?) in sylvis locis enebrosis suffocatis, sub muscis arborum cæsarum,” and which from his description differs but slightly from that described above. The first segment of the body he observes, “thoraci insecti perfecti respondebat,” and the 2d and 3rd “pectori insecti perfecti respondebant.” He describes the last joint of the abdomen as being “subpenultimum retractum anum emittebat cylindricum, longitudine segmenti, eo autem quadruplo angustiorum et supra spinis

duabus segmento longioribus, tripartitis quoad formam cornua cervina æquantibus armatum."

It is somewhat remarkable that DeGeer has figured no Staphylinidous larvæ, nor am I aware of any author who has done so.

I also add a description and figure of a third Larva, which for the reasons after mentioned, I had conceived to be that of *Aleochara fuscipes*; but the receipt of the following communication from Mr. Kirby has considerably shaken such opinion—"I suspect," he says, "that the Larva fig. 3, is not the Larva of any of the Brachelytra—From its habitat it may belong to one of the *Nitidulidæ*, which are very common in bones, (Comp. Introd. to Ent. iii. 168)—My Larvæ of that form are too large to belong to an *Aleochara*, and I find them in carcasses, with *Silphidæ* of the larger kinds."

Larva Fig. 3. A. aucta.

E. Larvâ Philonthi politi, præcipue magnitudine differt et staturâ latiori subconvexâ; capite nutanti latiorique, corporis segmentis latioribus. 1<sup>mi</sup> 2<sup>di</sup> 3<sup>i</sup>, marginibus lateralibus rotundatis. Segmenta alia in spinam lateralem, brevem ad marginem posteriorem producta. Tubus caudalis brevior, processus laterales longiores, tenuioresque sunt (B)—C. Antenna aucta.

Habitat in ossibus siccis tempore æstivo.

I shall now state my reasons for having considered these last as the Larvæ of *Aleochara fuscipes*. They were 1st, from finding them together with the *Aleocharæ*, and also the cast-off exuvie of the pupæ in the same dry rotten bone, the Larvæ running about as quickly as the perfect insects, and apparently of the full size, and the exuvie partly sticking out of the different small crevices in the bone, and not larger than the Larvæ; no other insect presenting itself except a small *Hister*: and 2<sup>dly</sup> from their perfectly agreeing (except in their ovate form, and a few other minor differences) with the general characters of the other Larvæ above described, and more particularly in the essential structure of the the description of Latreille of the Larvæ of the *Nitidulidæ*, in the antennæ and anal appendages, which latter entirely disagree with Hist. Nat. &c. quoted below, and it is also confirmatory of my



opinion that the species of *Aleochara* generally present a far more dilated appearance than many other species of *Brachelytra*.

De Geer (v. iv. pl. 6. f. 11) has figured the Larva of *Silpha obscura*, and which exactly agrees with Latreille's description of the Larvæ of that genus in the *Hist. Nat. &c.* and which he says has twelve segments, and is "alonge, tres aplati," and also "termine sur les cotes en angle aigu"—the anal appendages are described as "deux petites appendices coniques"—and not as being jointed as in my Larvæ. DeGeer's figure exhibits the antennæ much longer than in the Larvæ last above described by me, and it would seem from the figure of the upper and under side of the anterior segments of the body, that the head is entirely immersed in the underside of the first segment of the trunk, and which will account for Latreille calling it 12-jointed.

Latreille, in the work last referred to, describes the Larvæ of the genus *Nitidula*, as nearly resembling those of *Silpha*. Body flat and long with twelve joints; "terminès lateralement en un angle assez aigu." The last joint, as in *Silpha* being "garni de deux petites appendices coniques"—If however Mr. Kirby's opinion should hereafter be confirmed, there can I think be no greater proof of the connexion of the *Necrophaga* and the *Brachelytra* than the strong affinity of these Larvæ.

I ought not to omit to mention (since the resemblance existing between the forms of Larvæ and other groups of Annulosa has become an interesting subject of investigation; (consult K. & S. Int. 3. 162) that the dilated appearance of the Larvæ last above described by me, bears a most striking analogical resemblance to the shape of the body of *Philoscia muscorum*, one of the *Oniscidæ*.

The situation of the sub-genus *Siagonium* in an arrangement of the *Brachelytra*, will be between *Bledius* \* and *Zirophorus*, a

\* I am indebted to my friend Mr. Stephens for a sight of a new species of this interesting genus, lately taken on the Coast of Norfolk, by Mr. Skrimshire, and which may be thus characterized—

*Bl. Stephensii*. Fig. 4. A. B.

Magnitudo, statura et summa affinitas *Bl. armati*—Differt præcipue, capite masculo cornubus duobus, elongatis, lateralibus, acuminatis, erectis armato, (B.B. Caput absque antennis). Thorace spinis tribus margine anteriori in-

genus established by Dallman, and described and figured in his "Analecta Entomologica;" and which differs chiefly in the position of the horns of the head, which in that insect are both central, and not, as in *Siagonium*, lateral. (*Leptocheirus* of Germar is synonymous with this genus).

To the MacLeayian entomologist I should conceive that no group can supply a fitter subject for study than the *Brachelytra*, and for the following reasons: 1st, it is rarely that an exotic insect of this group is seen in any of the cabinets.\* Jurine has observed on a somewhat similar occasion, "Je ferai remarquer ici qu'il est bien étonnant de ne pas trouver davantage de tenthrèdes exotiques, décrites dans l'ouvrage de M. Fabricius, lui qui a visité un si grand nombre de collections; Ou serait presque en droit de demander à quoi tient cette rareté, si l'on ne connaissant pas le peu d'empressement qu'on a eu jusqu' à présent pour collecter les Hyménoptères et les Diptères."†—This however cannot be said with regard to the *Brachelytra*, for Mr. MacLeay, (Ann. Jav.) tells us "That it is a singular circumstance that no insect of the Stirps was collected by Dr. Horsfield. This at all events proves the extreme rarity of such insects in Java. Of their existence in the Island I have however no doubt: when it is considered that the British species are so numerous, it appears very

structo; duabus lateralibus brevibus medioque elongato, acuminato, apice piloso, et supra caput inter ejus cornua, erecta, procumbens (AA). Fæmina multo minor et absque cornubus est. Fig. 4. C. Thorax *Bl. armati*.

Domino J. F. Stephens viro amicissimo, et in Insectis Britanniaë certè peritissimo, hoc insectum singulare inscripsi.

De Jean, in his catalogue, has named a species from Dalmatia, *Oxytelus Taurus*, but as there is no description annexed to the name, it is impossible to be certain of the identity of the species; nor do I consider that we are in the slightest manner bound to notice any name given in print where no sufficient description is added.

Note—*Oxytelus fracticornis* and its congeners, ought to form a distinct

Sub-genus. They are much nearer allied to *Bledius* than to *Oxytelus*.

\* Out of the 434 *Brachelytra* mentioned in De Jean's catalogue, only 12 are extra Europæan; and Messrs. Kirby and Spence (vol. iv. p. 489) state, that from the present catalogues, the metropolis of the *Brachelytra* appears to be in Britain; Mr. Stephens possessing upwards of 600 British species.

† Nouv. Meth. de classer les Hymen. p. 63.

extraordinary that not one should have occurred in Java." And even when an exotic species is found, it does not present so great a difference of form from the European species as is observable in most of the other groups. The second, and by far the more important reason, is the amazing variety of forms presented to us in the known species, and which when properly investigated, would doubtless be highly useful in pointing out the proper places of other corresponding analogous groups; as in the case referred to by Mr. MacLeay, in the *Annulosa Javanica*, of the genus *Oxyporus* possessing similar labial palpi with the genus *Engis*.

I have little doubt as to the family *Omalidæ* being a perfectly natural one, consisting of the different genera which Latreille has placed in it, with the exception of *Aleochara*; on which I shall now offer a few remarks. I have before stated that I conceive this genus not in its proper position, where Latreille (Cuv. Regne An. 3. 223, and Latreille, Fam. Naturelles, 245) has placed it; namely, in his division *Applatis*; (*Omalidæ*, MacLeay) and the grounds of this opinion rest, not only on the very different external appearance which these insects present, but more particularly on the 4th joint of the maxillary palpi, (on which Latreille has principally founded his four divisions) and which does not well agree as to size with the description of the same part in the characters of his division *Applatis*. He says in his description of the last, "les palpes maxillaires avec le quatrième article distinct;" but describing the same part in the genus *Aleochara*, he says, "le dernier article *tres petit*"—and in fact, by placing this article at the end of the division, he appears to have been aware of their connexion with the next. In his "Gen. Crust. & Ins." he has arranged the genera differently, and has placed those of *Tachinus*, *Tachyporus*, and *Aleochara* together, at the end of the *Brachelytra*, and which appears to me far more natural. I shall only add, that long before I had seen either of the above arrangements by Latreille, I had grouped these three genera together, and had styled them "*Aleocharides*," and I observe that Messrs. Kirby & Spence, have also made use of the term "*Aleocharidæ*" to designate the same insects.

Placing then, the *Aleocharæ* with the *Tachini* & *Tachypori*, I

would divide the family *Omalidæ* into two sections—the first composed of the genera *Omalium*, *Proteinus*, *Anthopagus*, *Elonium*,\* &c. and the second comprising *Oxytelus*, *Bledius*, *Evæsthetus*, &c. and then the connexion between the genera appears strikingly natural: *Elonium*, combining in itself the external appearance of an *Oxytelus*, and the maxillary palpi of *Omalium* (to which genus it bears great affinity, and of which, the type *El. striatulum* was a species, both with Gravenhorst and Gyllenhal), joining the two sections at one point, where the insects of both sections are of an elongate form, and the interesting genus *Evæsthetus* (in external appearance resembling the depressed *Omalia*, and more particularly *Om. retusum* (which will form a new subgenus) and which until separated by Gravenhorst, was placed in the genus *Oxytelus* and which De Jean has also placed between *Oxytelus* and *Omalium*;) serving to connect the two sections at the other point,

\* *Staphylinus striatulus*, Fab. (*Om. rugosum*, Gr. Gyll.) has been formed into the genus *Elonium* by Dr. Leach—but I believe no characters have yet been published of it.

Plate II. . . . . Fig. 6 represents the Maxilla of this Insect.

Fig. 5 . . . . . ditto of the genus *Omalium*.  
(the type of which I consider to be *Omal. rivulare*)

Fig. 7 . . . . . ditto of *Oxytelus carinatus*,  
(*Staph. rugosus* Marsh.) which I consider as the  
type of that genus.

Fig. 8 . . . . . ditto of *Siagonium quadricorne*.

Fig. 9 . . . . . ditto of *Zirophorus fronticornis*.

And it is not a little singular that these two last Insects, which, from their apparent affinity with *Oxytelus*, we might infer would possess maxillary palpi similar to those of that genus, present these organs nearly agreeing in form with those which *Omalium* possesses. Indeed from my own observations on the subject, I have little hesitation in saying, that the maxillary palpi alone do not present characters sufficiently precise to enable us to found our divisions upon them, and I am confirmed in my opinion by Mr. MacLeay's remarks, both in his *Horæ Ent. Part. 1.* and also in his *Annulosa Javanica*, and more particularly in his observations in the last mentioned work on Latreille's Section of *Carabidæ* "*Subulipalpes*" (*Bembidium*) which was established on the same organ: and Mr. Kirby likewise in his *Century of New Insects*, (*Lin. Trans. Vol. 12*), speaking of the comparative length of the maxillary and labial palpi upon which the genus *Megacephala* is built, gives it as his opinion that it merely indicated the section of a genus, rather than a Genus.

and at which the insects of both groups are of a dilated form: and thus to complete the circle.\*

Whether the four remaining Families, viz. *Staphylinidæ*, *Stenidæ*, *Tachyporidæ*, and *Pselaphidæ*, be perfectly natural ones, I am not prepared to say; they however certainly appear to me to be so, and I shall here only endeavour to shew the points of connexion between some of the groups.

Gyllenhal, (Ins. Suec. 2. 372) speaking of the genus *Pæderus*, which belongs to the *Stenidæ*, (*Longipalpes*, Lat.) says "In ipso apice articuli tertii palporum anticorum, interdum acumen minutum observatur, quod forte præsentiam articuli quarti licet retracti denotat; quare hac in re, generi præcedenti (*Lathrobium*.) nimis affines sunt *Pæderi*"—And *Lathrobium* is placed by Latreille in his Section *Fissilabres* (*Staphylinidæ*, MacL.)—As to the *Pselaphidæ*, Latreille, (Regne Anim. 3. 364) says, they have "une grande affinité avec les Aleochares."—

The connexion between the *Brachelytra* (the last and certainly the most aberrant Stirps of the *Chilopodomorpha*) and the terrestrial *Adephnaga* (the first and normal Stirps of the same tribe) evidently takes place, as Mr. MacLeay has observed, in the Ann. Jav. at the genus *Lesteva* (*Anthophagus*, Gyll.) and I shall add Gyllenhal's remark on this affinity: "Generi *Lebæ* quoadmodo similes et affines sunt hujus Generis (*Anthophagi*) Species; ideoque familiam præcedentem (*Carabidæ*) cum præsentem (*Brachelytra*) jungunt" (Ins. Suec. 2. 191.)

I cannot quit the present subject without directing the attention of British Entomologists, to a circumstance connected with the *Brachelytra*, which is mentioned in Dallman's work above referred to, and which has I believe never yet been noticed in any English work (See Note 3). And as Dallman's work has not yet found its way into every one's hands, I am sure I need not apologize for quoting the passage.

\* In the genus *Elonium* no stemmata are visible, and the consequent affinity to *Oxytelus*, which I regard as the type of the other section, is certainly very obvious—while on the other hand *Evæsthetus* does possess stemmata, thus clearly demonstrating its affinity to *Omalium*.

## DE OCELLIS COLEOPTERORUM.

Cl. Dom. Germar docet ocellos adesse in genere Omalii, (Germar Mag. der Ent. 4. p. 410). Quod insolitum sane et inexpectatum in Coleopterorum Ordine—Staphylinos inde ego quoque examinavi. In Speciebus Anthophagi generis, Ocelli duo facile detengendi, versus medium capitis posterioris ad finem sulcorum, qui inter Oculos siti sunt. Etsunt et in A. Caraboide et in A. plagiato; etsi de hoc generi negare videtur Cl. Germar. In Omaliisque siti sunt in eodem loco, quo in Anthophagis; in Om. tecto, aliisque vero paullo posterius, in sulco capitis transverso. Observavi in Om. assimili, tecto, Ranunculi, rivulari, ophthalmico, cæso, pusillo, deplanato, Viburni, crenato; in Speciebus obscuris facilius, in pallidis difficiliter, detegendos. In Om. brachyptero quoque adesse videntur etsi obsoletiores—Novem ideo offerunt Characterem, quo distinguuntur Catheretes et Omalium. Ob affinitatem Oxyteli cum Omalio ocellos etiam in illo adesse suspicatus sum, sed frustra quæsi.

De prima observatione ocellorum in Coleopteris, cum Cl. Germaro mihi nullum est certamen; dicere tamen licet jam olim ocellos quosdam me observasse in Pauso bucephalo, eosque sate accurate depinxisse in Appendice ad Schoenheri Syn. Ius. 3. Tab. 6. 2. c, etsi Cl. Gyllenhal speciem describens, non ocellos, sed tubercula verticalia mamillata, dixerit.

## NOTE 1.

Since the greater portion of the above paper was written, the 3d & 4th Vol. of Kirby's & Spence's Introduction to Entomology, have at length been published. In the 4th Vol. p. 393, a plan of division of an order is given on a much enlarged scale. Whether too many divisions are not there introduced I do not pretend to say. I have not adopted them here from my ignorance of the corresponding groups in the *Brachelytra*.

## NOTE 2.

It is not a little interesting to observe that these remarks concerning the development of the horns in some specimens (written long before the publication of the two last volumes of Kirby & Spence) perfectly coincide with the observations in Vol. iv. p. 166 of that work respecting ano-

ther group (the *Onthophagi*) whose males are similarly cornuted. It will however require much attention and investigation to prove that these "perfect" specimens are (as suggested in the work referred to) of an intermediate sex, or a second sort of males, analogous to the Neuters amongst the gregarious *Hymenoptera*. After a re-examination of upwards of 50 males, I have not been able to find intermediate specimens between those with the short horns and the few with these organs much enlarged. But may not this extraordinary developement be more analogous to the occasional (but much rarer) acquisition of wings and hemelytra in certain species of Heteropterous Hemiptera (*Pyrrhocoris apterus* for instance) generally found without such indication of perfection?

## NOTE 3.

At page 506, Vol. iii of the same work, it is stated, "that although *Omalium planum* and its affinities, *O. striatulum* (*Elonium* Leach) and some others appear not to have *Stemmata* (*Ocelli*) yet with the aid of a good magnifier they may be discovered in most species of that genus, as likewise in *Evæsthetus* Grav." Also "that some species of *Anthophagi* appear to want them." As it does not appear that the authors have noticed Dallman's remarks on the subject, I have not thought it necessary to cancel the extract.

ART. V. *Observations on the Shells of an Acephalous Molluscum of the Family of Pectinidæ, for which the Generic name of Hinnites has been proposed by M. Defrance; together with the characters of several Species.* By G. B. SOWERBY, F.L.S., &c.

THE history of this genus, if genus it may be called, may be summed up in a few words. Some years ago M. Defrance, observing among some fossils sent to him by M. Cortesi, some specimens of an irregular bivalve, intermediate, as he considered it between *Spondylus* and *Ostrea*, Lam., but not strictly referable to either, proposed for the two species in his possession the generic name of *Hinnites*, under which article he soon afterwards published an account of them in the *Dict. des Sciences Naturelles*. In a short time, so many specimens of this singular genus were to

be seen in the possession of collectors, particularly in Paris, that the naturalists of that metropolis had a fair opportunity of becoming acquainted with its characters. Not so, however, the English collector, for the few specimens which found their way to this country were confined to one or two collections and were consequently scarcely known. The first notice that we find in connection with the genus in this country, has been given very lately in the Annals of Philosophy by Mr. Gray, who has described a recent species from a specimen in the British Museum. It cannot be considered as surprising that both M. DeFrance, who proposed the genus, and Mr. Gray, who thus added to the information concerning it, should have mistaken its real relations, the first, who as we have before stated, ranked it between the *Spondylus* and *Ostrea*, having only some fossil valves; and the latter who places it in the *Spondylidæ*, having described only a worn individual. It will be seen in the sequel of this communication that it rightly belongs to the *Pectinidæ*, and that it is hardly possible to separate it as a genus from *Pecten*,\* but were it to be established as a genus, it must be placed in the *Pectinidæ*.†

The examination of a number of specimens of three or four decidedly congeneric species have conducted me to the results which will be explained in the following observations. First, I must inform naturalists that one of our commonest British shells, a shell to which neither M. DeFrance nor Mr. Gray has referred, belongs to this genus, namely *Pecten Pusio* of some, *P. distortus*, of others. The singular manner in which this shell, almost con-

\* I am informed that Mr. Gray, immediately upon his return from Paris, has stated that he is convinced that *Pecten distortus* is of the same genus with *Hinnites*; as well as that the alteration from *Hinnites* to *Hinnita* is an error.

† I cannot doubt the fact of the *Pectinidæ* being all naturally affixed by a byssus, in the same manner as the *Mytilidæ*; indeed I have seen so many proofs that I consider it as perfectly settled. It is no more difficult to account for the large number that we see, without their byssus, than it is to account for the immense quantities of muscles we see on some shores, also without their byssus. If indeed, it be asserted that we sometimes see the muscles thrown on the shore with their byssus, and that we never see the *Pectines* with theirs, we have only to suppose that the byssus of the *Pectinidæ* is not so strongly affixed to the animal as that of the muscle; we know, moreover, that it is much more slender.



stantly, becomes pressed close to, and takes the shape of the substances to which it adheres, and the extremely rare occurrence of an opportunity of observing its byssus, may have given rise to the idea of its being adherent by its outer surface to those substances; whereas the contrary is really the case, as is proved by the very young specimens which never have any appearance of adherent outer surface. The same circumstance also occurs in the shells called *Hinnites* by M. DeFrance; Mr. Gray's ignorance of it has undoubtedly been the cause of leading him to describe them as adherent by their outer surfaces and not by a byssus,\* and consequently to the incorrect situation in the system, which both zoologists have assigned to them.

I shall therefore next propose the following as an amended generic character, observing that it is only in the circumstance of its being apparently adherent by its outer surface, and not by a byssus, that it differs from *Pecten*.

Fam. PECTINIDÆ.

Gen. HINNITES. Defr.

Testâ bivalvis, inæquivalvis, bysso adhærens, valvis auritis, radiatim striatis, umbonibus externè in areas subquadrangulares productis, sinu byssi parvò: cardinè edentulo; cartilaginè elasticâ, oblongâ, sulco utriusque valvæ profundo impositâ; ligamento marginali, lineari; rectiusculo.

Shell, bivalve, inequivalve, adhering by a byssus; valves eared, radiately striated; umbones within produced into the form of a rather quadrangular area, in the centre of which is the groove for the elastic cartilage; opening between the two valves, for the byssus, small: hinge without teeth, elastic cartilage † oblong, placed in a deep groove in each valve, and considerably prominent within the cavity of the shell: ligament marginal, linear,

\* Of the change in the name which Mr. Gray proposes, I only observe that it appears to be quite unnecessary: *Hinnites* will serve quite as well to represent a genus of which only *some* of the species, as it will one of which *all* the species are fossil.

† I have here adopted the terms given to the two parts of what is commonly called "ligament" proposed by Mr. Gray.—Dr. Leach was I believe the first who pointed out these two parts and explained their functions.

nearly straight. When young the shell is perfectly regular, but it generally becomes irregular by moulding itself close to the substance to which it is fixed, as it increases in size.

I shall now proceed to give the characters of the five congeneric species which are at present known.

1. *Hinnites Cortesyi*, Defr. Dict. des Sciences Nat. tom. 21 p. 169.

Testâ crassiusculâ, oblongâ, valvâ inferiore concentricè fimbriatâ, valvâ superiore longitudinaliter radiato-muricatâ, spinis breviusculis linguliformibus; long. max. 5 poll.\*

Shell not very thick, oblong; lower valve covered with fringes disposed in concentric circles; upper valve covered with short linguliform spines disposed in longitudinal rays, length (height, according to Mr. Gray) 5 inches.

This shell in its young state is very smooth, and in a slight degree radiately striated. It is only found in a fossil state, in the vicinity of Piacenza.

2. *Hinnites Dabuissoni*. Defr. loc. cit. p. 170.

Testâ oblongâ, valvâ inferiore concentricè striatâ, valvâ superiore longitudinaliter confertim radiatâ, radiis prope marginem imbricatis; long. max. 4 poll.

Shell oblong, lower valve covered with concentric circles, which mark the numerous periods of its increase; upper valve with numerous longitudinal rays, which are imbricated near the margins: length (height, according to Gray) 4 inches.

Found in a fossil state at St. Paul-trois-Chateaux and La Chevrolière. The muscular impression in this and the last is generally very distinct and large.

3. *Hinnites giganteus*.† *Hinnita gigantea*, Gray, in Ann. of Philos. Aug. 1826. *Lima gigantea*. Id. in loc. cit.

\* I have given the characters of the three first as nearly as I could according to DeFrance and Gray; of the other two I have myself drawn up the characters.

† The term *giganteus* is not correctly applicable to this species, as it is the smallest but one, of five here indicated. Since, however, it has been published under this name, I do not consider myself at liberty to alter it.

Testâ oblongâ, extus pallidè brunneâ, confertim radiato-sulcatâ; extus albâ, margine cardinali purpureâ; long. 4. poll. Alt. 5 poll.

“Shell oblong, rather thick, solid, outside pale brown, ornamented with numerous small rays; the left valve the most convex; the inside white, with the hinge margin fine dark purple, the area left by the moving forward of the ligament is also purple, and rather narrow, the groove for the elastic cartilage is very large and distinct in each of the valves and quite open, it is extended the whole length of the facet and considerably produced into the cavity of the shell. The muscular impressions are large and the submarginal is orbicular ovate with a considerable inflexion just even with the anterior ear. The length is four inches and the height from hinge to basal edge five inches.” Gray in loc. cit.

#### 4. *Hinnites corallinus*.

Testâ valdè irregulari, extus corallino-rubrá, valvâ superiore radiatim costellatâ, costellis muricato-subasperis; intus pallidè subfuscâ, marginibus basalibus sordidè purpureis; long. et Alt. subæqualibus.

Shell very irregular, outside of a fine coral red, upper valve with small radiating ribs, here and there muricated: inside pale subfuscous, basal margins dull purple: muscular impression having the appearance of a horny substance veined with the same as the other parts of the inside, its lower edges variegated with pale dull purple: inside composed of a distinctly faceted crystalline substance, with occasional black coriaceous spots near the edges. Lower valve paler in colour than the upper; very rough with the irregularities of the sandstone rock on which it has been placed.

The only specimen I have seen is in the collection of the Rev. Dr. Goodall; it was brought to England lately, from the eastern coast of Africa. Some *Serpulæ* and a *Balanus* are attached to it.

#### 5. *Hinnites Pusio*. *Pecten Pusio*. } nonnull.   ——— *distortus*. }

Testâ oblongâ, tenui, confertim radiato-striatâ, striis scabris; auriculis inæqualibus, radiatim scabris: valvâ inferiore subtus,

præsertim margine basali, plerumque irregulariter depressâ, politâ.

Shell oblong, thin, closely striated, striæ radiating, scabrous; ears unequal, with scabrous radiated striæ; outside of the lower valve, particularly the basal margin, generally flattened and smooth.

The regularity of this shell in its young state is remarkable, particularly when contrasted with the irregular form it assumes as it increases in age; and it is such as to render it, when young, a characteristic type of one of the divisions of the genus *Pecten*.

This is a common shell on the coast of Britain; it differs in the thinness of the shell and the distinctness of the ears from the other species; it is the smallest of all, seldom exceeding two inches in height. The byssal groove is much more distinct than is usual in the other species; in one specimen, however, of the *H. Cortesyi* which my brother possesses, this byssal groove is quite distinct. For about half an inch in height this shell is generally quite regular, afterwards it appears to be almost constantly pressed close to the substance to which it is affixed by its byssus, and sometimes becomes fixed by the shell itself, by spreading the testaceous matter close to the surface and in undercut hollows.

From the whole of the above I think it will appear that Mr. Gray had at first, though in error, come nearer to the truth in placing this genus among the *Pectinidæ*, with *Lima*, than afterwards in associating it with *Spondylus* and *Plicatula*; it certainly is much more nearly related to *Pecten* than to either *Spondylus* or *Ostrea*. It will also be observed that DeFrance has partly avoided an error into which Gray has stumbled, where he says of the genus that is “*adhérente*,” whereas Gray says “adherent by the apex of the right valve.” Gray adds that it has “no byssal groove,” which is also incorrect.

ART. VI. *Sketch of the Life and Character of the late Count de Lacépède.* By WILLIAM SWAINSON, Esq. F.R.S., &c.

[To the Conductors of the Zoological Journal.]

GENTLEMEN,

IT has been too justly observed, that the records of our Science are remarkably deficient in the biography of those eminent naturalists who are now no more, but whose works we are continually in the habit of consulting. The lives of men who have trodden the "sequestered vale" of Science, do not indeed furnish the historian with those striking events, and splendid actions, which belong to the Hero or to the Statesman; but they frequently teach us, that the wide circle of social duties may be performed, and the mental powers exercised for the public good, without interfering with the philosophic speculations of the closet. The character of the late Count de Lacépède seems to have exemplified this, most fully. His name has been long and justly celebrated in every country where Science has spread; and his funeral was honoured by three distinct orations, pronounced by M. le Comte Chaptal, M. Duméril, and M. Geoffroy de St. Hilaire. From these public testimonials, the following short biographic sketch of this distinguished and amiable man, has been compiled. As no similar notice, I believe, has yet appeared in our language, it may be interesting to many of your readers.

I have the honour to be, &c. &c.

WILLIAM SWAINSON.

---

M. le Comte de Lacépède (Bernard Germain Etienne) Member of the Royal Academy of Sciences, and Keeper of the Cabinets in the Garden of Plants, was born of a noble family, at Agen, in 1756. Naturally endowed with a passionate love of knowledge, he devoted the early period of his life to the study of natural philosophy, and the cultivation of music. On these subjects he published two volumes; and he has likewise been supposed to be the author

of two romances, and a volume of poetry.\* At the age of twenty-one years, he went to Paris, and soon formed an acquaintance with Buffon. A congeniality of pursuits, strengthened by mutual regard, laid the foundation for a friendship between these two great men, which lasted during life. From this period, he became enthusiastic in the love of Natural History. M. de Buffon soon appreciated the talents of his young friend, and free from those envious feelings, which, unfortunately, are found too frequently among the votaries of science, chose his most distinguished disciple as his friend, his coadjutor, and appointed him the continuator of his works. In a few years he justified this choice by publishing "l'Histoire Générale des Cétacées, des Quadrupèdes ovipares et des Poissons." The elegance of the style of this work is worthy of its model. On the death of his distinguished friend, M. de Lacépède was chosen to succeed him, and the Garden of Plants henceforward became his adopted heritage. The fame he had now acquired, induced the Editors of the *Histoire Naturelle*, at a subsequent period, to request that he would undertake a new edition of the whole work, as a guarantee to the public for its excellence and correctness. At an early period he had principally directed his attention to Electricity, and to the Phænomena of Natural Philosophy in general; but it was the great and laborious undertaking of continuing the Natural History of Buffon, that so greatly influenced the advancement of Zoology in his own country.

It is in the department of Ichthyology that the labours of Lacépède have been most conspicuous; he reformed and amended the classification, and has given the characters and history of numerous genera and species unknown to his predecessors, including all those described in the manuscripts of the celebrated Philibert Commerson.†

The researches of the Philosopher, however, did not interfere with the more important duties of the Statesman. At the com-

\* *Memoirs of Madame de Genlis*. Tom. II. page 228.

† Whom M. Cuvier calls "*Voyageur infatigable et très-savant naturaliste*." After such an eulogium, it would reflect honour on the French Government, if his Manuscripts and Drawings were published under their auspices, and not suffered merely to remain *deposited* in the National Library.

mencement of those troubles which terminated in great horrors, M. de Lacépède was called to the legislative assembly. Here his temper and moderation were eminently conspicuous; he long struggled to repress the first developments of those dreadful principles of anarchy, which soon spread through his devoted country, like a pestilential disease, corroding and destroying the root of all moral and religious feeling; but the voice of reason or persuasion could no longer be heard or regarded in the popular frenzy: he withdrew until the storm was spent; and until he was again solicited to resume his duties at the Museum of Natural History. Some years afterwards, the reputation he had acquired again called him to the Senate, and subsequently he had the honour of being chosen Grand Chancellor of the Legion of Honour, and was created a Peer of France.

In his political life M. de Lacépède was distinguished for his mildness, his moderation, and his love of justice. He laboured to establish order, to lessen the severity of certain arbitrary laws, and to render others more mild and supportable to the people; and such was the influence of his well-regulated mind, and of his reputation as a moral man, that his voice could moderate the angry discussions of that tumultuous assembly of legislators, over which he presided. He may be considered, as one of those very few, who after having fulfilled important and public functions, have not left an enemy to reproach their conduct, with a single act of tyranny or injustice.

In Science as in politics, M. de Lacépède was remarkable for a love of truth, and a spirit of order and arrangement, which pervaded all his habits. His works are characterized by purity of style, and by the enlarged views and conceptions of the philosopher.

His leisure hours were devoted to the elegant amusements of the accomplished man. His love of music led him to acquire a knowledge of its principles, and his compositions, which have been previously attended to, in this and in other arts, shew the taste and cultivation of a mind naturally sensitive and alive to beauty. In private life he was affable, mild in his prejudices; and united great delicacy of feeling with a noble and exalted mind. It has been

said that one of the most striking points in the character of M. de Lacépède, was a benevolence which delighted to exercise itself for the happiness of others,—to relieve misfortune, and to mitigate suffering. In the midst of his honours, he preserved the early simplicity of his manners, and to his total forgetfulness of *self*, may perhaps be attributed the fatal termination of that disease—the small pox—under which, at an advanced age, he expired, on the 8th of October 1825. His funeral took place at Epinay, and was attended by men eminent and illustrious in every branch of the Administration, who had sought and cultivated his friendship; while crowds of villagers followed their benefactor with sorrow to the grave. No less than three orations were pronounced over his tomb, and from the closing passage of that by M. Duménil, we shall conclude this imperfect sketch:—

“ Profond observateur, écrivain gracieux et brillant, savant naturaliste, professeur éloquent, académicien célèbre, généreux ami, homme excellent; il faut donc répéter ici dans notre affliction, cet Adieu touchant avec lequel vous nous quittiez si amicalement, lorsque vous nous tendiez une main défaillante, et que le sourire gracieux, accoutumé à obéir à votre âme aimante, cherchait en vain à se placer encore sur nos lèvres inanimées! Adieu! Adieu! vous vivez dans nos cœurs.”

---

ART. VII. *On Balanus punctatus, Puncturella Flemingii, &c.; together with some corrections relative to Turbo carneus, and some of the Chitones before described.*  
By the Rev. R. T. LOWE.

MUCH difficulty has always prevailed in defining, within proper limits, the species *Balanus punctatus* of Montagu. Mr. Clark of Bath; has with the greatness acuteness succeeded, after much attention, in discovering the true character. This consists in the anterior valve of the shell being always provided with two connecting shoulders; whereas in every other English species ex-



amined, the anterior *lateral* valves are furnished with the shoulder, one on each; while the anterior valve itself is unprovided and simple. In other words, in *B. punctatus*, both the anterior and posterior valves are furnished each with *two* connecting shoulders; in all the other British species, the posterior valve *only* is furnished with two; the lateral valves with one each; and the anterior valve is without any.

This character has been proved constant by the examination and dissection of a great number of specimens, from very different localities. The punctured appearance, and the locking together of the valves of the operculum, have been found very inconstant; but the character here mentioned is invariable; and from its simplicity and obviousness, entitles its discoverer to the highest praise.

*Patella apertura* of Montagu has been ascertained beyond a doubt, by my friends Mr. Clark and Mr. M. J. Berkeley, to be nothing more than the young of *Fissurella græca*. As the shell advances in growth, the spiral vertex becomes gradually more eroded, and finally quite disappears. Some specimens of this shell in the young state, have been named by Dr. Leach in the British Museum, *Cemoria Montagui*. They are there placed as a second species, with another shell communicated by Dr. Fleming, which is named *Cemoria Flemingii*. This last, though a very imperfect specimen, I have little doubt is identical with a shell found by myself in 1824, at Oban in Argyllshire; and which appears not to differ in any respect from *Patella noachina* of Linnæus, and Chemn. t. 197. f. 1927, 1928; and *Patella fissurella* of Mull. Zool. Dan. t. 24. f. 4—6.

Since the name *Cemoria* has not, as far as I am aware, been yet published as attached to this shell, which appears to me the type of a distinct group of the *Calyptraciana*, I propose to substitute for it the name of *Puncturella*, which is somewhat more expressive of the peculiar character. In our present ignorance of the animal, this is meant to be proposed as a distinct genus merely *provisionally*. All my specimens, unfortunately, were found without the animal.

## PUNCTURELLA.

CHAR. GEN. *Testa patellaris, vertice intorto, vel spirali, canali deorsum ampliore ab apice decurrente, in perforatione desinente. Perforatio obliqua; intus fornicata, aut quasi punctura laminá fornicatá instructa.\**

A second true species of this group, which was formerly in the collection of Mr. G. Humphrey, and is marked "from the Falkland Islands," has been most kindly presented to me by Mr. G. B. Sowerby. A third, he informs me, is in his brother's possession. Most probably *Fissurella gibberula* of Lamarck belongs also here. It need scarcely be added that the shell marked *Cemoria Montagu* in the British Museum, wants all the characteristic marks of the genus but the more general appearance, and has no trace of the canal nor of the peculiar internal structure of the true *Puncturellæ*.

In corroboration of Mr. Gray's idea that many of the minute *Cephalopoda* of Lamarck, are more nearly related to the *Annelida*, I am able to state that *Nautilus crispus* † of authors is certainly not an internal, but an attached shell. At Appin in Argyllshire, it is to be found, in the greatest abundance, attached to growing plants of *Delesseria alata*, and other marine hydrophytes. When the animal was placed alive under the microscope, a few fine radiating filaments appeared to proceed from the shell; but nothing further of the nature of the animal could be ascertained. More favourable opportunities, combined with patient investigation, may, it is to be hoped, be attended with better success.

Mr. Clark informs me, he has frequently procured *Serpula lobata* of Mont. alive, and that it is decidedly not an internal shell. Specimens in his cabinet, ground down, still exhibit the remains of the animal within the compartments of the shell.

\* Perhaps it would be better to say with Fabricius, "*intus in canalem brevem fornicatam producta.*"

† The shell when perfect is furnished with short points, set at regular intervals round the circumference, like the pricks on the rowel of a spur. These I suspect have something to do with the mode of the shell's attachment. They are very easily obliterated.

*Serpula concamerata*, Mont. is also attached to *Delesseria alata* from Appin. The fact of the two latter shells being attached, has however been long noticed.

*Terebratula costata*, Zool. Journ. ii. p. 105. t. 5. f. 8, 9, 9b, may possibly be *T. aurita* of Fleming's Phil. of Zool. ii. p. 493. t. 4. f. 5.; though it must be confessed that a comparison of its characters with the description of that shell in the work referred to, previous to the publication of *T. costata*, did not appear to warrant such an idea. It is much to be regretted that this circumstance was not stated at the time, and the reasons for considering it distinct. At the present moment I have not the book to refer to; but Dr. Fleming's opinion is certainly of the greatest weight.

I place full reliance on Mr. Gray's accuracy with regard to *Turbo carneus*, Zool. Journ. ii. p. 107. t. 5. f. 12, 13, 13b., whose identity with *Margarita striata*, Leach, in App. to Ross's Voyage, seems not to be questioned. In this case also, I have unfortunately not been able to verify the fact by a reference to the book itself; but no doubt remains of the truth of Mr. Gray's remark.

In answer to his query, why is this shell placed in the genus *Turbo* of Lamarck, rather than in *Trochus*, it should be recollected, that the round horny operculum is not made by Lamarck the characteristic of *either* genus; and therefore the presence of one in *T. carneus* does not forbid its being referred to the former, which, moreover, contains many species having undoubtedly a horny one. Besides, Lamarck's generic character of *Trochus*, "aperture depressed transversely, and shell conical," by no means answers to this shell. No "removal" has certainly been made by me "of the other species;" as it had been described by other authors long before, under the name of *Turbo Margarita*. It is also evident, that, though in referring *T. carneus* to *Turbo* (merely however provisionally, and on account of its near affinity with *T. Margarita* of Mont.), a synonym may have been added eventually to the nomenclature in respect to *this* species,—had it been referred to *Trochus*, the same must have happened in respect to the other, *T. Margarita*; since this surely belongs to the same genus as *T. carneus*, whatever that may ultimately prove. The less evil was therefore chosen, in referring to *Turbo* what was considered a new species, rather than removing from that genus an old-

established one. I however quite agree with Mr. Gray in considering *T. carneus* a *Trochus*, as that genus is now considered; on account solely of its operculum: it was merely, I repeat, referred to *Turbo* of Lamarck *provisionally*, in conformity with his arrangement; and with a view not to add to the synonyms of *Turbo Margarita* of Mont. by a change of its genus.\*

I take the present occasion to notice some more important errors in the synonyms of the *Chitones*. *C. cinereus*, Zool. Journ. vol. ii. p. 99. is undoubtedly *C. marginatus* of Montagu, Turton, and most British authors; though there is no reason still to doubt its being the true *C. cinereus* of Linnæus, Born, and the older writers; to whom I am well pleased to add the name and authority of Poli. *C. Asellus* Zool. Journ. ii. p. 101, on the other hand, proves to be the *C. cinereus* of Montagu, Turton, and some others; but cannot be identified with *C. cinereus* of the three above named authors.

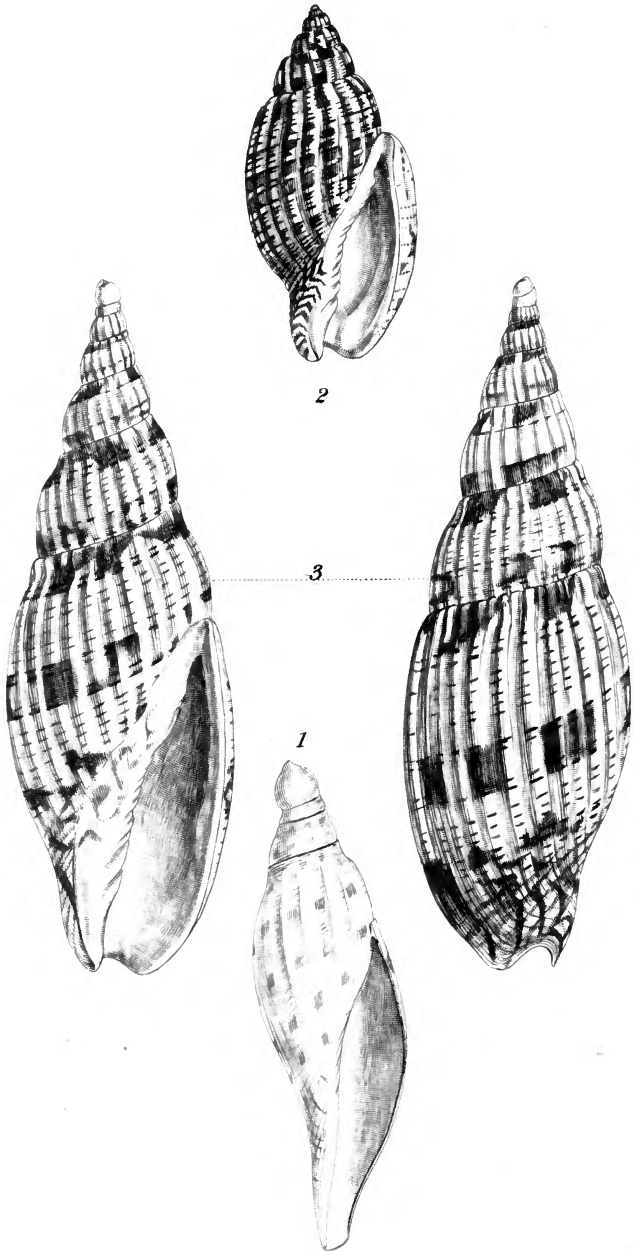
By the kindness of Mr. Children, I have been able clearly to identify *C. aselloides*, Zool. Journ. ii. p. 103, with *C. albus* of Montagu: how far the synonyms of other authors may be brought together for *C. albus*, it is very difficult to say. I have frequently seen small specimens of *C. Asellus* of Zool. Journ. in collections, under this name, which has probably been given, indiscriminately, to small paler coloured and white specimens of both the species. A card in the British Museum, marked "*C. albus*, Mus. M." amongst the remains of Montagu's Collection, sufficiently authorises his synonym. For the rest, the synonyms of Linn., Gmel., and Turton appear safe.

In the present state of things, it will be most advisable to retain the names of former British writers, for these three species. It is very desirable, at any rate, to get rid of the barbarous one, *aselloides*. At some future opportunity I shall endeavour fully to clear up the whole of the synonyms, particularly those of Chemnitz.

R. T. L.

\* The aperture is represented too angular in the figure in the Zool. Journ.; particularly in the magnified fig. 13*b.*, at its lower part. The aperture is very slightly, if at all angular at the top, though the lips are disunited; and almost imperceptibly at the lower part, though a little more so in one specimen only, and that the *distorted?* one mentioned.





ART. VIII. *Description of some new and rare Shells.* By  
W. J. BRODERIP, Esq. Sec. G.S., F.L., & H.S.

VOLUTA DUBIA.—*Fig-like Volute.*

V. testâ fusiformi, longitudinaliter sub-costatâ, transversim striatâ, flavicante, maculis fulvis, sub-quadratis, interruptis multifasciatâ; spirâ brevi, apice rudi, acuto-papillari; columellâ levisimè buplicatâ, basi integrâ. Long.  $2 \frac{1}{2}$  unc.

Mus. Princip. Massenæ.

Habitat?

Icon. Tab. 3. fig. 1.

Shell fusiform, slightly ribbed, longitudinally and transversely striated, yellowish, with many bands of interrupted, somewhat square, fulvous spots; spire short, apex rude, with the papilla terminating almost acutely; the pillar very slightly marked with two plaits, and the base entire. Length  $2 \frac{1}{2}$  inches.

This shell is one of those forms which convince us of the vanity of our artificial distinctions. When viewed from above it seems as if the spire of a *Voluta* were placed on the body-whorl of one of those *Pyrulæ*, which are commonly known by the name of *Figs*. Turn it, and the difficulty of classing the shell is rather increased; for the aperture is still Fig-like, and it requires an accurate examination to detect the two almost imperceptible plaits on the columella. The apex indeed, uncouth as it is, shews more like that of a *Voluta* than of any other shell, and it is utterly different from that of a *Pyruca*. Place it among the *Volutes*, and it will be found to approach nearest to *V. rupestris*: though one cannot but suspect that there are yet in the bosom of the deep many gradations of form between them. It is evidently a marine shell, and its locality does not appear to be known. There is, I believe, one specimen in the cabinet of Prince Massena. For the second known specimen, from which this figure and description were taken, I am indebted to M. Roussel. The shell is evidently faded.

VOLUTA MULTI-COSTATA.—*Many-ribbed Volute*.\*

*V. testâ ovato-fusiforimi, longitudinaliter multi-costatâ, flavescente, maculis nigricantibus, et lineolis nigro-spadiceis, frequentibus, transversis ornatâ; spirâ mediocri, apice acuto-papillari; columellâ multiplicatâ, plicis ultimis maximis; basi corrugatâ, emarginatâ. Long. 1  $\frac{1}{2}$  unc.*

Mus. nost.

Habitat ?

Icon. Tab. 3. fig. 2.

Shell ovately fusiform, with many longitudinal ribs, yellowish, with numerous blackish irregular spots and transverse brownish chesnut lineations; body-whorl corrugated at the base, which is emarginate; spire moderate, apex acutely papillary; pillar many plaited, the three last plaits being the largest. Length 1  $\frac{1}{2}$  inch.

This pretty and interesting shell, of which I have seen no other specimen, appears to form one of the beautiful gradations from those *Volutes*, which are popularly called *Musics*, to those which it is my intention to designate by the term *Mitriiform*, from their very near approach to the *Mitres*. In *V. multi-costata*, the upper plaits of the pillar are no longer strongly developed, the spire is beginning to lengthen, and the apex is become almost that of a mitre. Its locality is unknown.

\* Some parts of Lamarck's description of *V. mitraiformis* will apply to this shell: others will not. Neither in the Monograph in the "Annales du Muséum," nor in the "Animaux sans Vertèbres," is there a reference to any figure. The words "ornées de lineoles *rousses* transverses et de taches *rouge-brun* sur un fond blanchâtre," and "lineoles rougeâtres," do not convey the idea of the almost black colouring of our shell, while they are not inapplicable to a small specimen of *V. costata* (Swainson, Journ. of Science, vol. xvii. p. 33.) Lamarck describes his shell from a specimen in his own museum. Should our shell prove to be his *mitraiformis*, (and I am not at all sure it is not,) the name above given to it must be cancelled. The back of the shell is very dark.



VOLUTA LYRIFORMIS.—*Harp Volute.*

(MITRA LYRÆFORMIS. Swainson.)

V. testâ valdè fusiformi, longitudinaliter multi-costatâ, costis interstitiisque longitudinaliter striatis, carneâ, ultimo anfractu trifasciato, fasciis subcæruleis, maculis spadiceis interruptis superpositis, anfractibus cæteris eodem modo suturas versus bifasciatis; costis lineatis, lineolis rubro-spadiceis, transversis; spirâ valdè productâ, sub-attenuatâ, apice acuto-papillari; columellâ multiplicatâ, plicis ultimis maximis; basi corrugatâ, emarginatâ. Long.  $3\frac{1}{2}$  unc.

Mus. nost.

Habitat ?

Icon. Swainson, Zool. Illust. tab. 54. Tab. nost. 3. fig. 3.

Shell very fusiform, with many longitudinal ribs, which together with the interstices are striated longitudinally, flesh-coloured, the body whorl (which is corrugated at the emarginate base,) with three bluish bands ornamented with interrupted dark chesnut spots; the other whorls with two similar bands placed near the sutures; the ribs marked with regular transverse lines of a reddish chesnut; spire very much produced and rather attenuated, the apex acutely papillary; pillar with many plaits, the two last being much the largest.

The nearest approach to the Mitres is, perhaps, to be found in this rare shell figured by my friend, Mr. Swainson, in his Zoological Illustrations, under the name of *Mitra lyræformis*. Indeed he says, and there is no one more competent to speak on the subject, "It connects in the most beautiful manner the two genera of *Mitra* and *Voluta*." I should be diffident of describing this shell, after one so eminently qualified to enlighten every subject of Natural History which he approaches, were it not that the specimen from which he took his description, must have been originally poor and had certainly suffered subsequently from an "unmerciful cleaning;" so that he had not a fair opportunity of describing its characters. He has published this shell as a *Mitra*. The last plaits of the pillar, which are the largest, point out the

shell to be a *Voluta*. He has observed this to me, and as I believe that the observation has not been publicly made by him, I wish it to be understood that the correction is not mine but his own. I owe the possession of the very fine specimen, from which the accompanying figure and present description are taken, to Captain MARRYAT, R.N., who brought it to this country: nor do I know of any other, save that from which Mr. Swainson designed his plate. The locality of the shell does not appear to be accurately known.

CYPRÆA NIVOSA.—*Snow-flecked Cowry*.

C. testâ ovatâ, sub-ventricosâ, fuscâ, guttis punctisque albis adpersâ, subtus subalbidâ; lineâ dorsali ad latus dextrum approximante pallidâ, undulatâ.

Mus. nost.

Habitat?

Icon. Tab. 4. fig. 1.

Shell oval, rather ventricose, above brownish, flecked and dotted with white, pearl-coloured below; the dorsal line pale, undulated and approaching to the right side.

A shell at first sight bearing some resemblance to *C. Vitellus*, but which on a nearer inspection, will be found to differ materially from it, both in form and colouring. *C. nivosa* is less ventricose than *C. Vitellus*, and its dorsal line, which approaches the right side, reminds the observer of *C. Mappa*, though it is not so much branched. I am indebted to the liberality of Captain MARRYAT, R.N., for the addition of this shell to my cabinet. Its locality does not appear to be known.

CYPRÆA RUGOSA.

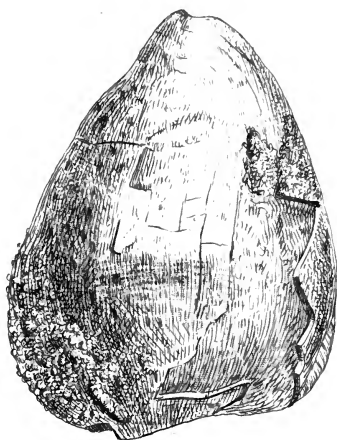
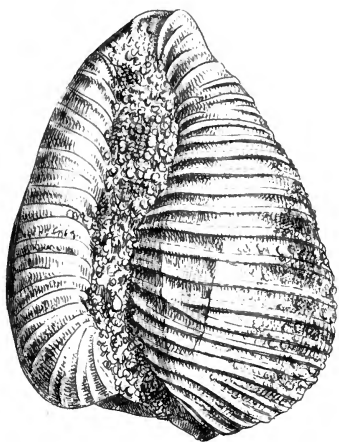
C. testâ ovato-globosâ; dorso gibbo; ventre, labio, marginibusque valdè rugosis.

Habitat? fossilis.

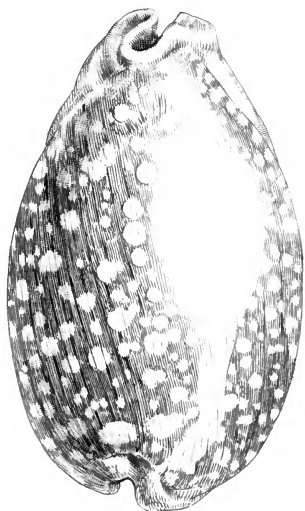
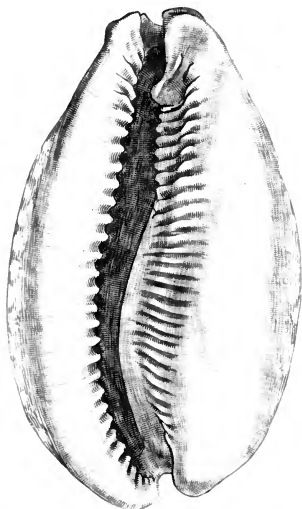
Icon. Tab. 4. fig. 2.

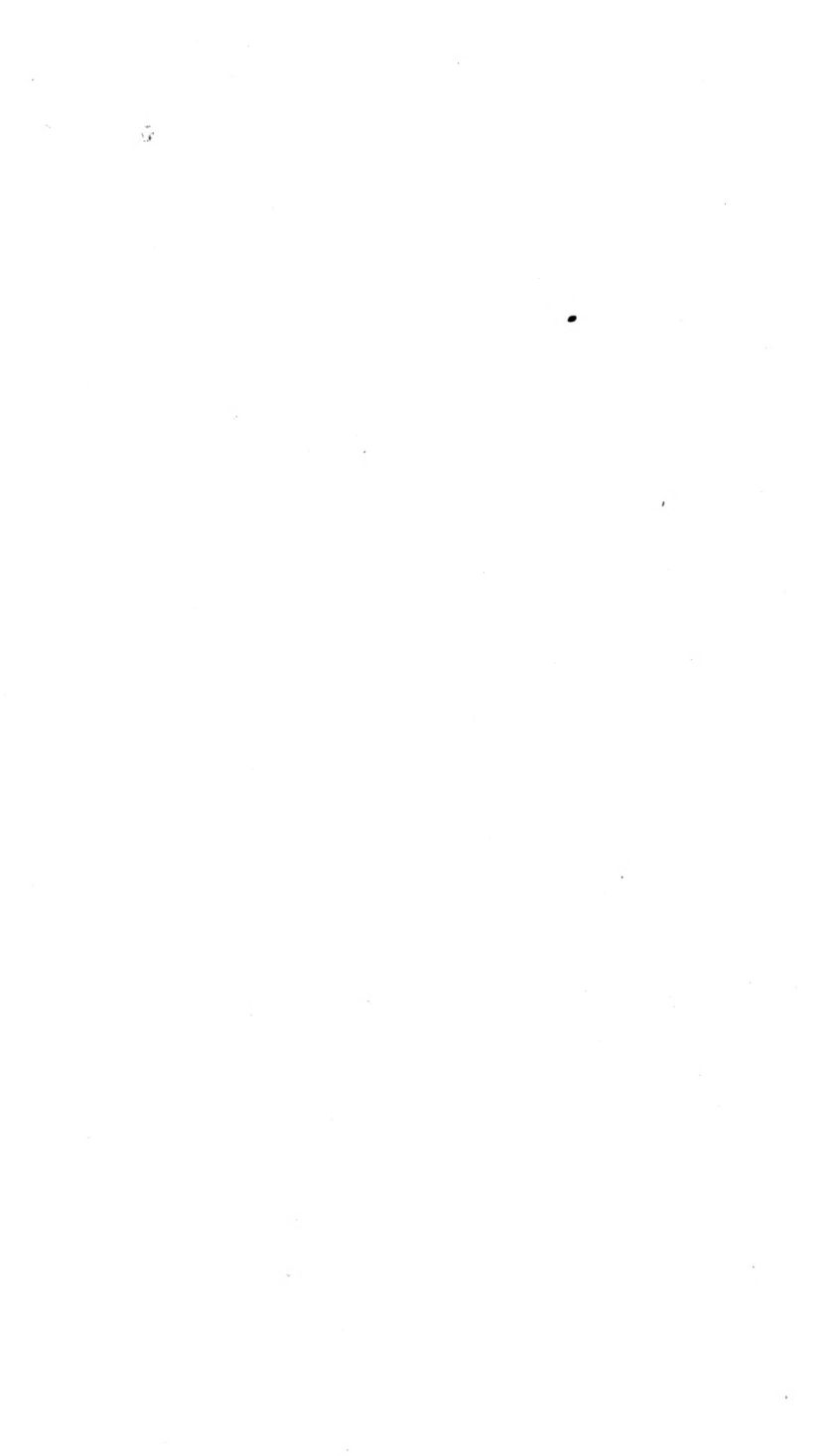
Shell ovately-globose, gibbous; the ventral disc, lip and margins very deeply wrinkled.

2



1





This fossil, which Mr. G. B. Sowerby, (who was struck with its general resemblance to my specimen of *C. guttata*,) was kind enough to send to me, was found in the *Superga*, near Turin? \* It appears to have suffered from pressure and fracture, which may have added to the gibbosity of the back; but still, though the likeness is great, it does not appear to me to be identical with *C. guttata*. The ventral disc of the latter, though corrugated as strongly as that of *C. rugosa* at the extremities, is comparatively smooth in the middle, and there the rugosities scarcely appear, excepting towards the mouth of the shell, where they again become strongly marked. The rugosities of the ventral disc of *C. rugosa* furrow the whole of that disc, and are rather strongest in the middle of it. With this exception, the *rugæ* on the disc, lip and margins of both shells offer the strongest similarity. The fossil appears much more gibbous than the recent shell above-mentioned.

---

ART. IX. *On the occurrence of some rare British Birds.*  
By WILLIAM YARRELL, Esq. F.L.S.

[To the Conductors of the Zoological Journal.]

GENTLEMEN,

Your liberal insertion of my former notice of the occurrence of some rare British Birds, has induced me to forward you the following particulars on the same subject, which I have been enabled to collect within the last four months.

*Parus biarmicus*, Linn. Two nests and the eggs of the Bearded Tit were this year forwarded to London. They were

\* I judge this to be the fact, from having observed it to be filled with the grains which so eminently characterize the fossils of that locality. The only specimen I have seen I found among some fossils in the Collection of Mr. G. Humphrey. The best account of this mountain and its formations is to be found in Brongniart's *Mem. sur les Terrains de sediment superieurs calcareo-trappéens du Vicentin.* p. 27. He has not, however, noticed this species.

G. B. S.

found in the parish of Horsey, about twelve miles from Yarmouth, in Norfolk. The nest is placed near the ground, being sustained only an inch or two above the surface by the strength of the stems of the coarse grass upon which it is fixed: it is composed entirely of dried bents, the finer ones forming the lining, and others increasing in substance make up the exterior. The eggs were four in number in each nest, rather smaller than those of *Parus major*, and less pointed; white, and sparingly marked with pale red irregular lines or scratches. Having obtained nests and eggs, the collector was requested to procure some young birds if possible, and in a few weeks, three, apparently belonging to the same brood, were sent up.

*Emberiza cirlus*, Linn. The Cirl Bunting was this year seen in several instances near Brading, in the Isle of Wight. Two nests with eggs were found, and a third containing young birds. The old ones were observed to feed constantly on the berries of the Woody Nightshade (*Solanum dulcamara*), and a paste made of this berry, wheat flour, and fine gravel, proved excellent food for the young birds, which were reared without difficulty, and are now in high health. Several old and young birds of both sexes were also obtained by shooting.

*Fringilla Cocothraustes*, Temm. *Loxia Cocothraustes*, Linn. The Hawfinch. A pair of these birds bred this summer near Windsor. The nest was not found, but the visits of the young birds to a garden excited attention, and part of the brood was obtained.

*Charadrius Cantianus*, Lath. The Kentish Plover. Two specimens of this very rare species have been shot on the coast of Norfolk, both young birds of the year. The original description of this British bird will be found in the second supplementary volume of Dr. Latham's Synopsis, page 316.

Montague considered this bird only a variety of the Ring Plover (*Ch. hiaticula*). Having now a young one of each species before me, killed about the same time, and previous to the first moult of either, I shall briefly point out those differen-

ces, which on comparison induce a belief that they are perfectly distinct.

The whole length of the Kentish Plover, from the point of the beak to the end of the tail, is five inches and three quarters, the whole length of the Ring Plover not quite seven inches, neither having as yet attained their relative full size. The beak of the first named is wholly black, that of the second has the point black, the base dark orange. The white of the forehead in the Kentish Plover extends over the eye on both sides, forming a conspicuous brow; the same colour in the Ring Plover barely reaches to the eye. The white collar of the neck in the Kentish Plover, extends from the front only a little beyond the ears on each side, and hence the name given to this bird by M. Temminck of *Pluvier a collier interrompu*. The collar of the Ring Plover is continued all round the neck, having a breadth of a quarter of an inch at its narrowest part. The length of the wing in the Kentish Plover, measuring from the point of the shoulder to the extreme end of the first quill-feather, which is the longest, is four inches and one-eighth; the same part in the Ring Plover is four inches and seven-eighths. The Kentish Plover has two outer tail feathers on each side wholly white, the Ring Plover but one. The *tarsus* of the Kentish Plover is rather longer and stouter, but all the toes are one-eighth of an inch shorter than in the Ring Plover. The legs in the Kentish Plover are black, those of the Ring Plover orange.

The young Kentish Plover before the moult, has no black about the head, the forehead and brows white, front of the neck the same, the patch on each side of the chest light brown, top of the head, and all the upper parts light ash brown, under parts entirely white. M. Temminck in the second edition of his *Manual*, describes this bird as common in England; he probably refers to the Ring Plover, about which no such notice is taken, though abundant all round our coast. The two specimens of the Kentish Plover here mentioned are the only recent ones I ever had an opportunity of examining.

88 Mr. Yarrell on the occurrence of some rare British Birds

*Ardea minuta*, Linn. A young specimen of the Little Bittern was shot during the summer on the banks of the Thames near Windsor: it was believed to have been bred there from the situation being favourable, and the circumstance of a second bird in the same state of plumage being seen about the same spot for several days at that time.

*Platalea Leucorodia*, Linn. Two specimens of the Spoonbill have been received in London, both of which were shot in Lincolnshire.

*Scolopax Major*, Linn. The Great Snipe has also occurred three times during the autumn; two were shot in Lincolnshire, and the third in Huntingdonshire.

*Tringa pusilla* and *minuta*. These two diminutive Sandpipers, the smallest of the genus, appear to have been constantly confounded together. Montague has described both, and was aware of the difference, but without venturing to separate them as distinct. Of six specimens lately received in London, two, from the vicinity of Chichester, belong to the species first named, and four to the latter. The *Pusilla* is rather smaller than the *Minuta*, and may be distinguished by the olive-brown colour of the legs, and the short *tarsus* eleven-sixteenths of an inch in length. The legs of the *Minuta* are black, and measure seven-eighths of an inch. There is also a marked difference in the habits. The *Pusilla* resembles the Common Sandpiper (*T. Hypoleucos*), frequenting freshwater streams and ponds a few miles inland. The *Minuta* prefers the sandy shores of the coast, and when found is generally in company with the *Purre*.

I am, Gentlemen, yours, &c.

WILLIAM YARRELL.

Ryder Street, October, 1826.

---

NOTE.—The *Tringa pusilla* has also been named *T. Temminckii* by Leisler. The description of the *Tringa pusilla* of Linnaeus, does not, according to M. Temminck, refer to either of the two European species.



ART. X. *Supplement to "an Account of four Species of Stormy Petrel,"*\* (Thalassidroma, Vigors†). By C. L. BUONAPARTE, Prince of Musignano, &c. &c.

In the above named paper I only established three of the species, and merely indicated the fourth on Temminck's authority: the existence of the latter, as distinct from my *P. Wilsonii*, became every day more doubtful; and I had to regret, in my "Obs. on the Nom. of Wilson's Ornithology," not being able to settle that important point. It is with great pleasure that I shall now put this species on the same footing with the others, under the name of

#### 4. PROCELLARIA OCEANICA, nob.

*Tail* slightly emarginate, the *wings* when closed extending more than an inch beyond its tip; length of the *tarsus* nearly one inch and three quarters (18 French lines).

#### *Synonymes.*

Le Pétrel ou Oiseau tempête, Buff. pl. enl. 993. (a very correct representation). Id. Ois. vol. ix. pl. 23. (but not the accompanying description). Stormy Petrel, Lath. Syn. vi. p. 411. No. 18. Museum in Antwerp. Probably ‡ the *P. oceanica* of the original drawings of Forster, icon. 12, (which I have not seen); for which reason I have given that name to my species, although I have ascertained that the bird that bears it in Temminck's celebrated collection is but a bad specimen of my *P. Wilsonii*. As for the *Petrel échassé* of Temminck it must be erased from the list of species; and it is most probably established partly on the above-

\* For a notice of this Account see Zool. Journal, vol. i. p. 425.—Ed.

† This group has already been established in my Systematic Catalogue of the Birds of the United States of North America; but having given it no name, it is with pleasure that I am here able to adopt the scientific one applied by the above-named English Ornithologist.

‡ At all events Forster's species *P. oceanica*, not having been published, cannot interfere with mine. I have besides no doubt of their identity.

named specimen of *P. Wilsonii*, and partly on Buffon's plate of *P. oceanica*, as in his specific phrase he describes the wings of the latter and the tarsi of the former.

*Description.*

General colour brownish-black, somewhat tinged with cinereous; primaries and tail darker; secondaries and wing-coverts not tipped with whitish; belly and vent each side, flank, some of the under wing-coverts and upper tail-coverts, *totally*, white; bill three-quarters of an inch long, and with the feet, black. Total length, eight inches and a half.

HABITAT. The Pacific Ocean and the South Seas; common near the Cape of Good Hope.

COMPARATIVE OBS. In comparing this species to the three others, it will be seen that it is the largest and the more varied with white of the sub-genus, and that it can be confounded only with *P. Wilsonii*, to which it bears a strong resemblance in shape and colour, both having the tarsi greatly elongated, the tube of the nostrils equally recurved, the upper tail-coverts entirely white, &c. But in addition to its much larger size, proportionally longer bill and tarsi, and lighter colour,\* this new species may at first sight be distinguished from it by its wings extending so much beyond the tail, and by the want of the yellow spot on the interdigital membrane, which is found in *P. Wilsonii* only.

\* In colour it agrees with *P. Leachii*, which is also next in stature; but the much shorter tarsi, stouter bill, forked tail, and brown shafts of the tail-coverts of the latter will always prevent their being confounded together. I also identified Temminck's *P. Leachii* with mine a few days ago. The species is now common in collections.

ART. XI. *A Reply to some Observations in the "Dictionnaire des Sciences Naturelles," upon the newly characterized groups of the PSITTACIDÆ.* By N. A. VIGORS, Esq. M.A., F.R.S., and L.S., &c.

[In a letter addressed to the Conductors of the Zoological Journal.  
August 1st. 1826.]

GENTLEMEN,

I shall make no apology for requesting your insertion of the following reply to some strictures which have lately appeared in a French publication on a part of my ornithological labours. The kindness with which your pages have hitherto been opened to me, encourages me to trespass thus far upon you. In some measure indeed I consider myself to have a slight claim to this favour. Your journal has been the channel through which I have promulgated most of the views that have incurred the disapprobation of the French writer, and ought equally perhaps to be the channel through which I should attempt the vindication of their correctness.

There is no task in general more repugnant to my feelings than that of defending myself against the animadversions of my fellow labourers in science. The notice of such attacks upon our opinions evinces too great a susceptibility to criticism; and lays us open to the imputation that it is ourselves, and not the science we cultivate, that we wish to uphold. The views in Natural science which we advance from time to time in our various speculations ought to be left to answer for themselves: and our only reply to the observations of others should be the alteration of such points as maturer judgment and more favourable opportunities of observation, either on the part of our reviewers, or on our own, have proved to be erroneous; or the silent retention of our opinions where no ground has been exhibited for censure. Such a mode of reply would exempt the public from much of the personal feelings of individuals,—a subject at all times of little interest,—and the cause of science would pursue its due course, without the interruption of extraneous matter. In the present instance, however, I

consider the attack which it is my intention to notice, as rather national than personal. We can not have failed to observe, and to observe with no common regret, that a disposition to depreciate the Zoological labours of this country prevails to a great extent among the Continental writers. And at a period when a new impulse has been given to our science in this country, and a new school of Zoology, if I may so express myself, is forming itself among us, it becomes us to be doubly guarded as to its interests, and not to suffer its rising reputation to be at once overborne by the mandates of assumed authority. It is the wish of vindicating our views against the arbitrary influence which seems exerted to check them in their infancy, and not any personal feelings, that urges me to the present task. The objects aimed at, and the modes of investigation pursued in Natural History, are of such a description as to call for the exertions of every man, and the co-operation of every country; but these exertions and this co-operation must be allowed their free course, without limits or restrictions. The republic of science will admit of no dictator.

The animadversions to which I would draw your attention are contained in the 39th Volume of the "*Dictionnaire des Sciences Naturelles*," under the article "Perroquet." They form part of the 20th and 21st pages of that volume, and purport to be a general review of Dr. Horsfield's and my subdivision of the *Psittacidæ*. The Article is subscribed by the highly respectable name of M. Desmarest.

The chief points contained in this critique may be stated as follows.—A general condemnation is inferred of any subdivision in so natural a group, [le genre si naturel,] as that which forms the Linnean genus *Psittacus*. The subdivisions which have been pointed out by Dr. Horsfield and myself are affirmed to be founded on minute differences, without any value, or any apparent regard to the mode of life of the animals that compose them;—[sur des differences minutieuses, sans aucune valeur, et sans aucun rapport evident avec le genre de vie des animaux dont on les compose]. Most of our groups, it is asserted, have not even the merit of being original. They have nothing new but their names; "being the same," it is averred, "as those secondary groups which

have been long since pointed out, and well distinguished, [tres-bien distingués], by MM. Brisson, Buffon, Vieillot, Le Vaillant, Kuhl, and other naturalists who have made a true progress in this branch of ornithology, without overcharging it with new\* and useless denominations." A few minute observations, which shall be briefly noted in their places, against particular names, are added to this sweeping condemnation.

When you take into consideration, Gentlemen, the strong and unqualified language in which these censures are conveyed, you will be surprised to learn that the characters and descriptions of the greater part of the genera thus censured are as yet unpublished. Most of the new groups of the *Psittacidae*, characterized by Dr. Horsfield and myself, belong to the Ornithology of New Holland, our observations on which are only now in the course of publication in the forthcoming Volume of the Linnean Transactions. I have intimated this fact in one of the preceding numbers† of this journal; and in a succeeding number I have again merely referred‡ to these genera, introducing their names only, without entering into any details of the character or habits of the birds that compose them; being unwilling to anticipate observations about to appear in another publication. I do not wish to dwell upon the inconsistency, if not the injustice, of any writer's pronouncing the characters of groups to be minute and valueless before he has seen them. I shall only observe that such a mode of criticism is not founded on the usual principles of reasoning, and certainly does not accord with the courtesy which generally obtains among naturalists.

The time has however gone by, when any individual will be allowed to assume the right of prescribing how Nature is to be investigated. Natural History is no longer an occult science on

\* I do not exactly discern the force of the above epithets of the French writer. If we give a name to a newly characterized group it must necessarily be a *new* one. To give an *old* name would decidedly be an error. A *useless* name must indeed be allowed to be objectionable; but it must be proved to be useless before the objection can be made with justice.

† *Vol. II. p. 61.*

‡ *Ib. p. 400.*

which a few of the *soi-disant* initiated will be exclusively authorised to issue their edicts, as if from an oracle. Like every other subject of research, it is open to the inquiries of every man whose industry or whose opportunities afford a promise of prosecuting it to advantage; and like every other science it is to be pursued according to the usual modes and the admitted principles of reasoning. The views and the labours of the naturalist are, in fact, to be praised or condemned, not by the voice of authority, but by their own intrinsic merits or defects. Among the subjects which this freedom of investigation has brought before the publick, is the right demanded by every inquirer into nature of characterizing and naming such groups as may appear to him worthy of such distinction: and as far as may be judged from the general practice of the higher naturalists of the present day, this question appears to be decided in the affirmative. The principle of distinguishing new genera seems not only admitted, but, with one or two exceptions, universally acted upon: and the only question on the subject which admits of being canvassed regards the extent or the abuse of the privilege.

It is not therefore by the mere force of his own word or opinion that the critick in the "*Dictionnaire*" can now expect to reverse this decree, and proscribe the institution of new divisions in any group, much less in so extensive a genus as that of the Linnean *Psittacus*. The expression of such an opinion must be considered of no further influence than as it affects the writer's own practice. There is not an argument advanced by him in the work in question to support his opinion; his remarks are restricted to mere assertion; and there is nothing new among them which calls for an observation in addition to what has been so often urged on this subject, except perhaps the expression, in which so much meaning appears to be implied, that "*Psittacus* is a natural genus."

Are we to infer from this expression that because a genus is natural, it must not be subdivided? If so, I know scarcely a group in the modern arrangements of Zoology which admits of a subdivision. Every group is inferred to be natural, that is, to have its prototype in nature, as far as man can understand the original, or it ought not to be adopted. How few for instance of the Linneau

genera are otherwise than natural in this sense of the word. And yet there are few of them, whose extent required subdivision, which have not undergone this process. In the Linnean *Mammalia*, for example, *Simia*, *Vespertilio*, *Felis*, &c.; in the Birds, *Lanius*, *Motacilla*, *Ardea*, *Scolopax*, &c.; among the Insects, *Scarabæus*, *Carabus*, *Curculio*, *Papilio*, &c., have all submitted more or less to that necessary subdivision which has brought the numerous species contained in them into comprehensible groups, and yet all are equally natural genera as that of *Psittacus*.

The critick seems in this instance to have founded his inference upon an error, which I more particularly wish to notice, as I have frequently heard a similar objection advanced in this country against the separation of nearly allied species into generick groups. It would appear as if he wished it to be inferred, that to subdivide is to disunite; and that such subdivision among naturally conterminous species makes a breach in their affinities. But the subdivision of a natural group like *Psittacus* does not infer disunion among its component parts: the subdivided part still remains an integral part of the more comprehensive group to which it originally belonged. The species of *Cercopithecus*, *Cynocephalus*, *Papio*, *Ateles*, *Cebus*, &c. &c. are as much component parts of the genus *Simia*, Linn., as when included indiscriminately and without classification under the latter comprehensive name. No breach takes place in the more enlarged affinities which unites these species into the one general group; while the more immediate affinities which unite them into minour groups are more clearly pointed out by the subdivision. Nay more, the extreme and osculant species of two separate but conterminous genera may be preserved, by the same mental operation which defines the genera, in still closer contact with each other, than two species even of the same genus, between which other species intervene. The same principle extends in fact through every group of every rank and denomination. Two species of different orders may thus be more closely united in affinity than two species of the same order. The affinity, for example, between a species of the Linnean *Strix*, and one of the Linnean *Caprimulgus*, may be considered more close, although the birds belong to different orders, than the affinity between the two selected species and other species of

their respective orders; that is, between the *Strix* and a typical species of *Falco*, and between the *Caprimulgus* and a species of *Corvus* or of *Motacilla*. In fact our arrangements of natural objects are now founded upon the principle that there are no divisions in nature; and all our nominal divisions are merely mental assumptions adopted for the sake of convenience. They imply that the mind can keep certain assemblages apart in its conceptions, by fixing upon certain typical modifications of form; but the names affixed to these assemblages, and the arbitrary limits assigned them in no wise infer an actual separation between them.

The very objection which has been subsequently brought forward in the "*Dictionnaire*" against the subdivisions of the *Psittacidae*, that they have been previously pointed out by antecedent writers, would, if true, prove that even in the writer's mind the subdivision of a natural group does not infer an unnatural separation. These subdivisions of the French naturalists to which he alludes are noticed by him with every commendation; and we hear no complaints of their introducing any breach of affinity in "the natural group" of *Psittacus*. It is true that these latter subdivisions are called sections and have French names assigned them, while mine are denominated genera, and have Latin or scientific names of distinction. But whatever may be the value of the denomination given to the group, or whatever may be the language from which the particular name of it is derived, the principle which regulates the subdivision is still the same. If there be no difference between the groups themselves, it would be the height of absurdity to suppose that a greater infringement upon the laws of arrangement, as far as they regard affinity, would take place when these groups are called genera, than when they are distinguished by the name of sections.

But we must come more closely to this point. In all the other Linnæan genera, such as those subdivided groups to which I have alluded above, there seems to have been no hesitation in calling the subdivisions genera. Many of these groups are by no means so copious in species as *Psittacus*, which it is to be remembered, contains two hundred and twenty-four species, according to the writer in the "*Dictionnaire*." Why the subdivisions in the group



before us should be called sections, while equivalent subdivisions in equivalent groups are called genera, I can see no reason; and against the arbitrary mandate that issues such a law I must decidedly enter my protest. I proceed to support this protest by insisting upon the two following points: first, that these subdivisions of the *Psittacidæ*, whatever may be the name by which we think fit to call them, are *bonâ fide* genera, according both to the philosophical signification of the term genus, and the particular adaptation of it to Natural History; and secondly, that the same groups are marked by equally distinctive characters, and are kept apart by equal differences in the modes of life of the birds which compose them, as are found in any other of the admitted genera in Ornithology.

What, in short, is a genus? Are we to conclude from the observations of M. Desmarest, that there is something sacred in the word, when once it has been attached to a group, that prevents any future interference with it:—that it represents, in short, the real essence of the subjects for which it stands, and will consequently admit of neither change nor modification? Or rather, in accordance with the opinion of one of our first philosophers, should we not consider a genus to "belong not to the real existence of things," but to be "the creature and invention of the understanding;" and to represent an assemblage which has been brought together in our ideas by the usual process of generalization, and invested with a name, for the more convenient communication of knowledge?

Such at least is the usual acceptance of the term.—"A *general idea*," says Dr. Watts, "is called a *genus*; and it is one common nature agreeing to several other common natures."\*—"All the great business of genera and species," observes Mr. Locke, "amounts to no more but this, That men making abstract ideas, and settling them in their minds with names annexed to them, do thereby enable themselves to consider things, and discourse of them as it were in bundles, for the easier and readier improvement and communication of their knowledge; which would advance but slowly were their words and thoughts confined only to particu-

\* *Logic. Part I. chapt. III. sect. III. p. 34.*

lars.”\*—“The reason,” he again resumes, “why I take so particular notice of this, is, that we may not be mistaken about genera and species, and their essences, as if they were things regularly and constantly made by nature, and had a real existence in things; when they appear, upon a more wary survey, to be nothing else but an artifice of the understanding, for the easier signifying such collections of ideas, as it should often have occasion to communicate by one general term; under which divers particulars, as far forth as they agreed to that abstract idea, might be comprehended.”†

One of the chief causes which this eminent philosopher assigns for our not being able “to rank and sort things, and consequently to denominate them by their real essences,” is, “because we know them not. Our faculties carry us no farther towards the knowledge and distinction of substances, than a collection of those sensible ideas which we observe in them; which however made with the greatest diligence and exactness we are capable of, yet is more remote from the true internal constitution, from which those qualities flow, than, as I said, a countryman’s is from the contrivance of that famous clock at Strasburgh, whereof he only sees the outward figure and motions. There is not so contemptible a plant or animal that does not confound the most enlarged understanding.—The workmanship of the all-wise and powerful God, in the great fabrick of the universe, and every part thereof, farther exceeds the capacity and comprehension of the most inquisitive and intelligent man, than the best contrivance of the most ingenious man doth the conceptions of the most ignorant of rational creatures. Therefore we in vain pretend to range things into sorts, and dispose them into certain classes, under names, by their real essences, that are so far from our discovery and comprehension.”‡ Still, however, although it must be insisted upon that genera owe their origin to a mental operation, it must be

\* *Essay on Human Understanding. Book 3. chapt. 3. § 20. Works. Vol. II. p. 172. Ed. 1812.*

† *Ib. Book 3. chap. 5. § 9. Works. Vol. II. p. 187.*

‡ *Ib. Book 3. chapt. 6. § 9. Works. Vol. II. p. 198—9.*

equally admitted that in generalizing the groups of Natural History, the naturalist has a view to the apparent combinations formed by nature, according to which he endeavours to regulate his general ideas. "I would not here be thought," continues Mr. Locke, "to forget, much less to deny, that nature in the production of things makes several of them alike: there is nothing more obvious, especially in the races of animals, and of things propagated by seed. But yet, I think, we may say the sorting them under names is the workmanship of the understanding, taking occasion from the similitude it observes among them, to make abstract general ideas, and set them up in the mind, with names annexed to them as patterns or forms (for in that sense the word form has a very proper signification) to which as particular things existing are found to agree, so they come to be of that species, have that denomination, or are put into that classis."\*—"This then, in short, is the case; nature makes many particular things which do agree one way with another in many sensible qualities, and probably too in their internal frame and constitution: but it is not this real essence that distinguishes them into species; it is men, who, taking occasion from the qualities they find united in them, and wherein they observe often several individuals to agree, range them into sorts, in order to their naming, for the convenience of comprehensive signs.—Nature in the constant productions of particular beings make them not always new and various, but very much alike and of kin one to another: but I think it is nevertheless true that the boundaries of the species whereby men sort them are made by men.—So that we may truly say, such a manner of sorting things is the workmanship of man."†

\* *Ib.* Book 3. *chapt.* 3. § 13. *Works.* Vol. II. p. 166.

† *Ib.* Book 3. *chapt.* 6. § 36. 37. *Works.* Vol. II. p. 219. See also Book 3. § 30. *Works.* Vol. II. pp. 213—214. Mr. Locke was no professed naturalist;—and yet there are observations on nature scattered throughout his works which would do honour to systematists of the highest reputation in our science. The mode in which he alludes to the chain of beings extending throughout the universe, [*Ib.* c. 3. § 12. p. 202.] the imperceptible gradations by which they are united together, and the impossibility of drawing decided lines of demarcation between them might be studied with advantage by those writers who insist upon their groups being founded on decided distinctions.

If then it be admitted that this formation of genera is an operation of the mind, it follows that the same mental operation which created them can alter or modify them as seems proper. And if the genera of Natural History are founded upon the similitude which the subjects of nature appear in our limited ideas to bear to each other, it is according to the increase of our knowledge respecting them, and the more accurate acquaintance which we are enabled to make with their qualities, that our changes and modifications must be regulated.

It is also evident that in the process of generalization the term genus may be philosophically applied to every group of every degree in the series. Particular denominations may, it is true, be applied to the several groups which represent different stages in this process; and when a science or subject becomes complex, such denominations must necessarily be assigned for the purpose of pointing out the value of each group as it occupies a higher or a lower rank in the general scale. In Geography, for instance, the different combinations represented by the words County, Province, Kingdom, Empire, &c.; in Military Tactics, by Company, Battalion, Brigade, Division, &c.; in Natural History, by Family, Order, Class, Kingdom, &c., are more definitely pointed out by such terms than if we were to call them genera with numerical or other distinctions. Still such groups, although for the sake of perspicuity, invested with such particular titles, are neither more nor less than genera. We may even again make intermediate stages amidst these already admitted combinations, and we may call them by such names as sections, or subdivisions; or subkingdoms, subclasses, or subgenera; or in short by any other term which appears most appropriate to our purposes: but every such intervening combination will still be found to represent one common nature agreeing to several other common natures, and, as such, it is strictly and logically a genus.\*

\* For the reasons assigned above, I have always felt adverse to the use of the term *subgenus*, although it has been sanctioned by the highest authority. There is a sort of anomaly in the word as generally applied. A subgenus is, strictly speaking, a species; genus being the proximate group to species, according to the usual acceptance of these terms. It is true that all these terms are merely

Species also is equally with genus the creature of the understanding. It may be equally applied to all the groups in the scale of generalization, unless to that which we consider the highest genus. Both these terms are in fact relative, and are used perhaps with logical correctness only when an immediate reference is made to each other. The same group is a genus or a species, according to the relative place which the mind assigns it in our ascending scale. "These universals are *genuses*," says Dr. Watts, "if compared with less common natures; and they are *species*, if compared with natures more common. So *Bird* is a genus, if compared with *Eagle*, *Sparrow*, *Raven*, which are also common natures; but it is a species, if compared with the more general nature, *Animal*."\*

conventional, and if naturalists agreed among themselves to use that of subgenus in the same sense as section or subdivision, there is no reason why it should not be adopted. But something more is inferred in these subgenera than their being merely sections of a genus. They are elevated into a higher rank by being distinctly characterized and separately and scientifically named; and herein lies the main objection. When we give a name to what we call a subgenus, we intend that name either to be used or not. If the latter is our intention, we fall into the error of increasing the number of names without any ostensible benefit. If we mean on the other hand that the name should be used, we create confusion between the generic and subgeneric name. We will take an example from the highest source. The *sacred beetle* of Egypt belongs to the genus *Scarabæus*, M'L., and to the subgenus *Heliocantharus*, M'L. Are we to call the insect *Scarabæus sacer*, or *Heliocantharus sacer*? Were we to decide on calling all species belonging to a subgenus by the subgeneric term, we fall moreover into the inconsistency of designating equivalent species by titles of unequal value. Some species will have a generic and some a subgeneric title. *Cetonia aurata* for instance, and *Heliocantharus sacer*, although insects of equal importance, have names, the first as generic, of higher, and the latter as subgeneric, of subordinate value. The uniformity of nomenclature, one of its highest merits, is thus sacrificed to what can only be called a temporary expedient. If in fact we consider our groups to be worthy of separate characters and separate names, there is no reason why they should not in the first instance be called genera, and the higher group receive a denomination of still higher import. We thus at once meet and overcome the difficulty that is imposed upon us by the influx of new forms, and numberless species, without exhausting our efforts in the vain endeavour to defer a reform in nomenclature which must ultimately be adopted.

\* *Logic. Part I. chapl. III. Sect. III. Note 1st. p. 35.*

There is this particularity however in Natural History that these terms of genera and species have been particularly adopted for groups of an ascertained rank in the scale of generalization. For the greater convenience and precision of communication, as well as to preserve uniformity in scientific nomenclature, it seems to have been agreed upon by common consent that every subject in natural History should be designated by two names, one more general, the other more specific; the first to point out the group in nature to which it appears to belong, the second to point out the especial station it holds in that general group. By equally common consent, and for reasons which must be obvious to all,\* the two groups which are pointed out by the selected names are those which represent the two first combinations formed in the act of generalization as the mind advances upwards from individuals. To these combinations the terms genera and species are respectively applied *per excellentiam*. And thus these terms, which in their original acceptation might have designated every assemblage of every rank in the series of generalization, assume a definite signification when applied to Natural History; species denoting the proximate group into which individuals are united by some quality or qualities common to all, and genus the proximate group into which species so formed are similarly united.

Were the subjects of Natural History like those of many other branches of science, definite in their numbers, and well ascertained

\* The chief advantage resulting from the use of the proximate genus is the brevity attending it. The tediousness of summing up all the various more remote terms is avoided by using one which comprehends all. When we name a subject in Natural History by the usual terms of science, I consider that we in some measure may be said to give a definition of it. Now the correct mode of defining any thing, is "by joining the general and special nature together, or (which is all one) the genus and the difference." [*Watt's Logic. Parl 1. ch. IV. p. 94.*] Dr. Watts sufficiently explains the reason, why the genus thus used should be "the nearest genus." [*Ib. p. 95.*] Mr. Locke also notices the quickness and brevity resulting from the use of the proximate genus. "This may show us the reason why in the defining of words, which is nothing but declaring their significations, we make use of the genus or next general word that comprehends it. Which is not out of necessity, but only to save the labour of enumerating the several simple ideas which the next general word or genus stands for." [*Book 3. ch. 3. § 10*]

as to their qualities, the groups into which they are assembled might be considered equally definite. The value of these groups would be invariably the same, and the names chosen to represent them might be set down as fixed, and at all times proper for the purposes of communication already stated. *Simia* might thus always continue *Simia*, and an original *Psittacus*, according to the views of M. Desmarest, be a *Psittacus* to the end of time. But there is this peculiarity in Natural History, particularly in its earlier stages beyond which it can scarcely even now be considered as having advanced, that the number of its subjects can be reduced to no limits. Every day's experience proves that their increase eludes all our efforts to circumscribe them. It consequently happens that the original groups, which at first were proximate in our ideas to species, cease to continue so; and the mind seizes upon intervening characters of distinction by which it is enabled to reduce the increasing subjects within a comprehensible compass. The limits of species may perhaps be considered capable of being defined, although I must confess I think even this point problematical: but until our knowledge of nature becomes perfect,—a period little to be expected,—the next proximate groups to species must ever be subject to variation.

A single instance will illustrate this remark, as well as point out the process by which the mind endeavours to proportion its groups to the increasing number of the subjects brought before it. Linnaeus, in his attempts to reduce the *Coleopterous Insects* into order, observed several species among them which bore a similitude to each other in their general structure, in having apparently six *palpi*, and in their *antennæ* being filiform. He characterized this group accordingly; and as it was the proximate group to species he called it a genus, and distinguished it by the name of *Carabus*. The number of species known to him amounted to forty-two. Small as was this number, in comparison to that known in our days, it appears that he considered it too extensive for a single group, and he accordingly made an artificial but still a convenient subdivision in it according to size; separating the species into *majores* and *minores*. As the subject began to be more closely investigated, the discovered species became excessively numer-

ous, the original tens increasing to hundreds; and new leading characteristicks were selected to distinguish them, such as the emargination of the anterior *tibiæ*, the abbreviation of the *elytra*, the pedunculation of the *abdomen*, &c., &c. By these means such groups as *Harpalus*, Lat., *Brachinus*, and *Scarites*, Fab., the true *Carabus*, &c., intervened between the original genus *Carabus*, Linn., and the species of that group; and as these groups now became proximate to species, they virtually became genera in their turn. These genera again, as science advanced, were found inconveniently prolifick in species, those of the original Linnean group, amounting, as has been lately observed,\* to sixteen hundred; and more minute but still important characters of distinction, such as the different forms of the several parts of the *trophi*, the shape of the *thorax*, the relative proportions of the joints of the *antennæ*, &c., &c., were still further resorted to for the purposes of subdivision. Intervening assemblages thus crept in between these latter genera and their species. And to select one of them for an example, *Harpalus* was resolved into *Chlænium*, Bon., *Catascopus*, Kirby, *Dicælinus*, M'L., the true *Harpalus* of Authours, and several similar groups, which, being now proximate to species, respectively assumed the title of genus according to the peculiar acceptation of that term in Natural Science. In this process the original groups of *Carabus* and *Harpalus*, which had successively filled the place of genera, having become of a still more comprehensive nature, received appellations of a proportionally higher value; and they are now distinguished as a family or a *stirps* according to their respective station in the series.

It cannot be here concealed that the apparent closeness with which such investigations are carried on has brought down some reflexions on the modern naturalist. It has become the fashion of late to inveigh against this minuteness of research, and to allege that the higher views of the science are sacrificed to subordinate and petty details. I cannot subscribe to this doctrine. In making a comparison between the earlier and present views of the science, we must take into consideration the relative knowledge of both times. And when we find that a single genus of Linnæus, his

\* *Annulosa Javanica*. Part. 1. p. 11.



*Scarabæus* or *Carabus* for example, is now as extensive in species, as his entire *Coleopterous* order, we must admit that as ample a field for the higher speculations of science is open to the naturalist even in the former apparently subordinate groups, as Linnæus had before him in a group of what is deemed the most comprehensive description. Nor is our process in the distribution of the species of such groups confined, as is frequently objected, merely to analysis. As much combination is employed in comparing and bringing together the allied species, as analysis in subdividing the higher group. And if the synthetick mode of reasoning is to be pronounced the superiour means by which the naturalist arrives at his conclusions,—a gratuitous assumption, however, for Natural Science while it investigates every property of the subjects before it, should equally employ every means in the investigation,—that mode is now not only equally made use of, but is carried to a greater extent than at any former period of the science. We cannot in fact employ the analytick mode of research in the present state of the science without the synthetick. We analyze the genus by synthesizing the species. But this is merely a negative view of the merits of the modern process. A positive advantage conspicuously results from this closeness of investigation. Characters are brought into notice which were overlooked in the earlier stages of science: and in proportion to the extent to which characters of every description become known, is our knowledge advanced of the relative stations in nature of the groups in which they are found. We can form but a contracted view of the natural world when we found our arrangements upon one or two properties or characters only. Such a process may lead to a knowledge of differences, but never can advance the discovery of affinities. It is only by the comparison of all the qualities of groups, as far as the naturalist can discern them, that their affinities and analogies can be satisfactory detected; and thus only can we attain the probability of making our representations of nature bear any similitude to the true and only system. The very minuteness of our mode of research thus eventually conduces to its comprehensiveness; and upon these very details are founded the highest and most generalizing views of the science.

But to return to the subject more immediately before us.— From the foregoing observations and the authorities which have been adduced to corroborate them, it may be summarily concluded that the subdivision of an extensive genus like *Psittacus* is not merely philosophically correct, but conformable to the usual process employed in Natural Science. The only groups whose value and denomination can be in any wise considered definite, are species. All the superiour assemblages of every degree are perfectly arbitrary, and are subject to variation as the species included in them, and the modifications of form discernible among these species, call for further subdivision. The only question to be considered in respect to this subdivision is the importance of the characters on which the intermediate groups are founded. We are thus brought to the second point which I had proposed to notice; and I shall proceed to the examination of the chief objection which has been levelled against the new genera of the *Psittacidae*, that they have been instituted “upon minute and valueless differences.”

If I were asked to point out what appears to be the greatest modern improvement in Natural Science, I should say that it is that mode of arrangement which results from the conviction that there are no divisions in nature; and in which accordingly groups are established, not upon the difference, but upon the variation of their characters. The naturalist seeks out the typical characters of his larger groups at the point where they appear most strongly developed, and then tracing their various modifications until they may be said to evanesce, and give place imperceptibly to the succeeding characters of the neighbouring groups, he fixes upon these various modifications as ideal marks of separation between his subdivisional groups. He is in this manner guided, not by detecting distinct or opposing characters, but by tracing out the modifications of the same. The first suggestion of this mode of viewing nature, in contradistinction to that which is founded upon a supposed separation of groups, was made by Linnæus, whose maxim “*Natura ubique varia semper tamen eadem*,” directly acknowledges this principle. He had not himself materials sufficient to act upon it invariably; and yet many of the genera which he

either originally instituted or adopted from others, such as *Lanius*, *Turdus*, and *Motacilla*, for example, or *Fringilla* and *Loxia*, originated in this mode of viewing nature. We may trace the same principle through most of the genera which have been still more lately instituted, although it does not appear that the authours of them were aware of the principle which guided them. *Totanus*, *Limosa*, *Scolopax*, *Rhynchæa*, *Tringa*, with intermediate groups; *Pastor* and *Lamprotornis* of M. Temminck; *Dendrocolaptes*, *Certhia*, and *Orthonyx*, as lately characterized;— all these, and in fact almost all the allied groups of modern terms, if closely investigated, will be found to exhibit no difference in characters, but merely variations of the same. The genus *Platyrhynchus*, the only group which at this moment I remember to have been instituted in ornithology by the naturalist whose name is subscribed to the critique in the "Dictionnaire," possesses no characters, at least if we may judge of it from the types which M. Temminck has given in his "Manuel," but what are modifications of those of *Muscicapa* and *Muscipeta*.

This was one of the leading principles which actuated Dr. Horsfield and myself in our subdivisions of the *Psittacidæ*. One of the chief typical characters of the group appeared to us to consist in the strength of the bill. Formed for breaking the hardest vegetable substances the typical bill seemed to be indicated, as in the group of *Maccaws* (*Macrocerus*, Vieill.,) by its shortness, height, and solidity. In these birds the height from the *mentum* to the forehead at least doubles the length from the *rietus* to the *apex*; the under mandible, instead of being elongated, as is usual among birds, is bent inwards with a strong emargination; while a line drawn from the centre of it to the *apex*, the head of the bird being in the regular erect position, is nearly vertical. On the other hand the aberrant bill may be pointed out by its decreasing strength and greater elongation, as in the group of the Indian *Lories*. Here the length is not less than the height; the under mandible is entire; and a line drawn from the centre of it to the *apex*, the position of the head being as before, is nearly horizontal. These modifications of the characters of the bill evidently point out a corresponding modification in the nature of the food of

the family, and indicate a variation in that food as it gradually descends from the hardest to the softest vegetable substances.

In addition to these characters others have been taken into consideration, which appeared to us of no mean value; such as the form of the wing and tail, and the relative proportions of the feathers of each; the greater or less elevation of the *tarsi*; and the structure of the tongue. These appear to be characters which are not only prominent and easily recognized, and at the same time indicative of various modifications in the economy of the birds in which they are found; but characters which have already been employed as of the highest importance by those naturalists who have established leading groups in our science.

The characters, for instance, taken from the structure and proportions of the wing and tail must be considered of primary consequence, as more or less conducive to the powers of flight:—powers, which it may be recollected form one of the typical distinctions between *Birds* and the other *Vertebrata*. It consequently becomes a leading object of the naturalist to point out the perfection or deficiency of these organs of flight by the most marked distinctions in his power. In the present family he finds an occasion of peculiar interest for the exercise of this privilege. We may remember that the group of the *Perching* Order, which approaches most closely to the *Rasorial*, is the Tribe of *Scansores*. One of the characteristics by which this approach is indicated is the decreasing powers of the wing in the *Scansorial Birds*. And the naturalist, in marking the modifications by which these latter birds gradually pass into the *Rasorial* families, whose typical station is on the ground, and who consequently require no superiour powers of flight, is enabled to point out more strongly one of those beautiful affinities by which nature connects her leading forms.

The greater or less elevation of the *tarsus* of a bird is again a character of much consequence, as indicating its habits to be more or less terrestrial. And accordingly we find many important groups, such as *Myiothera*, Ill., and *Pitta*, Vieill., among the *Thrushes*; and *Saxicola*, Bechst., and *Brachypteryx*, Horsf., among the *Warblers*; with several others of acknowledged importance, established chiefly upon the modifications of this character. Here

also in the family before us we find that the investigation of this peculiarity leads to a speculation of more than ordinary interest to the inquirer into affinities. Of the two orders now brought into comparison the typical station of the *Perching Birds* is on trees, of the *Rasorial Birds* on the ground. But the extreme Tribe of the former Order, or the *Scansorial Birds*, are found to seek their subsistence by running or walking up the stems of trees in a mode corresponding with that of the *Rasorial Order* on the ground. The trees, if I may so express myself, are to them the ground. Now if we find these walking and running habits of the *Scansores* still further developed, and that some of the groups actually feed, not on the trees but on the ground itself, we shall have occasion to notice a still nearer approach, and a still more immediate interchange of character, between these neighbouring orders. This we find to be the case in an extensive group of the *Psittacidae*, which comprises the *ground Parrakeets* of Australia, or the genera *Nanodes*, *Platycercus*, and *Pezoporus*; as well as in a group of the *Picidae*, or *Woodpeckers*, distinguished by Mr. Swainson under the title of *Colaptes*, and which includes the *Pic laboureur* of M. Le Vaillant and several American species. These birds with the general characters of the *Scansores* occupy the same terrestrial station as the *Gallinaceous Birds*; and while the other typical species of their Tribe may be said to be walkers or runners up the trees, they may be pronounced to be climbers on the ground. This interchange of character is eminently beautiful and well deserves the attention and the distinction of the naturalist.

Nor is the structure of the tongue a character of less importance. Many well established genera, and groups of even still higher value have been separated in consequence of the modifications of this member. The *Woodpeckers*, the *Creepers*, and the whole of the *Mellivorous Birds* may be selected as examples. The typical tongue of the *Parrot* is so well known, and has been an object of such familiar observation in all ages, that any deviation from the ordinary form appears to lay claim to even peculiar attention. But while this deviation among the *Parrots* is interesting with reference to the birds of their own group, it becomes

doubly so in consequence of the station which the group itself holds in the great series of ornithology. We may observe that the whole of the birds which feed chiefly or exclusively by the tongue, whether upon insects, or upon vegetable juices, such as the birds already mentioned, including the families of *Picidæ*, and *Certhiadæ*, and the five families of the Tribe of *Tenuirostres*, are united together by one continued chain of affinities, and may be arranged in one contiguous group among the *Insessores*. Now the birds that come next in affinity to the *Picidæ*, which commence this series of *tongue-feeding Birds*, are the *Parrots*. The approach in these latter birds to the typical character of the conspicuous assemblage which succeeds, consequently exhibits another striking instance of the mode in which nature gradually blends the characters of her groups into each other. And the naturalist who marks this gradation by a strong distinction gives additional truth to his ideal representations, and strengthens their similitude to the disposition of nature which they profess to copy.

Such are the considerations and such the characters upon which the subdivisions of the *Psittacidæ* have been founded. With all due deference to the authority of the critick of the "*Dictionnaire*," I cannot persuade myself, that, either viewed abstractedly, or with reference to the characters on which other groups have been established in ornithology, they are "minute and without value." How far these characters have "any regard to the mode of life of the animals which compose them," has already been partially pointed out. And I think I shall sufficiently illustrate the difference in the manners and habits of these birds by instancing three species; whose economy I will assert,—and let it be remembered that assertion is the only argument made use of by my opponent,—exhibits as strong marks of distinction as that of any other species of a natural group, which have hitherto been considered worthy of generick separation. The birds I shall instance, are, the *Maccaw*, breaking with its powerfully constructed bill the hardest vegetable substances in the tropical forests of America;—the *Platycercus*, with its comparatively feeble bill seeking a softer substance upon the ground in the high latitude of Macquarrie's Island, where not a tree is to be seen;—and the de-

licately formed *Trichoglossus*, with its filamentous tongue finding its support in the temperate climate of New Holland among the never-failing blossoms of the *Eucalypti*.

The fact is that if we do not characterize these and similarly circumstanced groups, when the opportunities, which the singular advantages of this country afford, occur for this purpose, the task will be undertaken by others. The experience of every day proves that this will be the case. In the last number of this journal I had occasion to refer to some new genera which have been lately characterized on the continent in this very family of *Psittacidæ*; and one in particular, the genus *Aratinga* of M. Spix, which accorded with my group of *Psittacara*. I could point out moreover several groups in Natural History, whose separate existence as genera have been merely indicated by some of our naturalists, who refrained from naming them in deference to the opposition that was raised against the institution of new genera; and which groups nevertheless were subsequently named and characterized by the very writers who were the most forward in declaiming against the practice.

I shall now, Gentlemen, beg leave to draw your attention to the second chief allegation of the writer in the "*Dictionnaire*," that the new groups of the *Psittacidæ* have not even the merit of being original. I shall not trifle with your time so far as to dwell upon the decided contradiction between this observation and the preceding animadversions which I have just disposed of. If Dr. Horsfield's and my groups of the *Psittacidæ* are the same as those of antecedent writers; and if the latter groups are deserving of the praise of being, as is stated, "well distinguished," surely ours can with little propriety be asserted to be founded on "minute and valueless differences." Nor shall I allow myself for a moment to suppose that the critick means to insinuate by this observation that either Dr. Horsfield or myself would claim any credit (if credit is due upon such points) by appropriating to ourselves the fruit of the labours of others. Were such an allegation to be preferred, I have only to refer back to the pages of this journal, where some of the groups of the *Psittacidæ* have been characterized; and where it may be seen how far I have been

either ignorant of the labours of antecedent writers, or unjust to their merits. I hasten at once to the more immediate point of the justice of this censure. You will bear in mind, Gentlemen, that the main assertion of the critick, when he opposes the high pretensions of so many of the continental ornithologists to our humble exertions, consists in these two points;—that these writers have already “well distinguished” our groups, and distinguished them without “overloading the science with new names.”

M. Brisson stands the first upon the list; a name of deserved reputation in science. But let it be recollected that not a single species of New Holland *Parrots* upon which the greater part of our new groups are founded, has been described in the “*Ornithologie*.” The divisions of the *Parrots* indicated by M. Brisson, with the doubtful exception of *Lorius*,\* in no respect interfere with ours. They can scarcely be said to be “trés-bien distingués;” for the characters, which, it is to be observed, are not formally detailed, as is usual in Natural History, but only incidentally hinted at in the introduction to the species, are drawn merely from the colour or size of the bird, or the length or shortness of the tail. While, strange to say, our only guide to these divisions are their names. And *Ara*, *Cacatua*, *Lorius*, *Psittacus*, *Psittaca*,

\* M. Brisson has pointed out several subordinate groups among his genera, which he indicated merely by giving them names. The groups which he considers as real genera, are distinctly marked out by full distinguishing characters; but the minour groups are not even set apart as sections or subgenera, or as any of those subdivisions with unassuming titles which, without aiming at the importance of genera, form the nucleus of future groups of generick, or even of still higher, degree. These names of M. Brisson I consider merely as so many suggestions; and as he hesitated himself, indeed declined, to make them generick, we cannot now in correctness quote them as such. The rule should be invariable, that no group should be considered the genus of any naturalist that is not decidedly characterized and named by him. It is for this reason, that I decline calling the group, alluded to above, the *Lorius* of M. Brisson, although he certainly pointed it out by name. It is true that he has gone farther in pointing out the subdivisions of the *Parrots* than of any other of his genera: as he mentions some of their less important characters in the general introduction to the genus. But still he withheld from separating them as genera; and we consequently cannot attribute to him a group, which he virtually refused to establish when he had the opportunity of doing so.



*Psittacula*, names without any characters, or at least such characters as are adequate to scientifick purposes, stand in direct contradiction to the assertion of M. Desmarest.

M. Buffon succeeds. No man will venture at this day to dispute the claims of this pre-eminent naturalist to the highest rank in science: but no man, I conceive, will be hazardous enough to attribute those claims to his views of arrangement. In fact he professedly set his face against all systematick forms; and when he was obliged to institute some necessary subdivisions for the sake of perspicuity, he founded them upon the most inconsequential characters, such as colour, locality, &c. What for instance are his subdivisions of the *Parrots*?† I shall select an example as quoted in the Article itself before us, the writer of which pronounces with so much authoritativeness that these groups are "well distinguished." The whole of the *Parrots* have been separated by M. Buffon into two primary sections;—those of the Old World, and those of the New. Such a division evidently disarranges the affinities of the subordinate groups; both continents possessing species, which, if not strictly belonging to the same group, belong at least to groups immediately connected by affinity, and which nevertheless, in the arbitrary geographical arrangement are disjoined from each other by a considerable interval. I shall add the following example, which will sufficiently point out the scientifick value of the subordinate groups. The American *Parrots* with even tails are divided into—*Amazones*, with yellow on the head and red on the carpal joint of the wing;—*Cricks*, smaller in size, without yellow on the head, or red except on the coverts of the wing;—*Papegais*, still inferiour in size, without any red on the wing. Here then in the second instance of the high-sounding authorities paraded against us in the "*Dictionnaire*," I may be allowed to assert, that the groups of M. Buffon are *not* "well distinguished," according at least to the usual modes and principles of science; and that they *are* set apart "by names."

† If we turn to the 21st page of the 2nd volume of M. Le Vaillant's "*Histoire des Perroquets*," we shall find how much the opinion of that naturalist, no inadequate judge on such a subject, is at variance with the assertion of the writer, in the "*Dictionnaire*," that M. Buffon's groups of the *Parrots* are "très-bien distingués."

The name of M. Vieillot follows in order. To him science is indebted for the first institution of the genera *Macrocerus* and *Plyctolophus* among the *Psittacidae*; for he also,—to quote the words of the critick of the “*Dictionnaire*” against himself,—has “overcharged this department of ornithology with new and useless names.” In what manner these groups or any other divisions which that naturalist may have noticed in this family interfere with Dr. Horsfield's and my groups, I have yet to learn.

Of all the naturalists who have paid attention to the *Psittacidae*, M. Le Vaillant went the furthest in indicating the natural groups of the family. Three out of nine of the new genera named by Dr. Horsfield and myself conjointly, or by myself solely, have been pointed out by him. These groups indeed exhibit such strong marks of distinction, that they could scarcely have escaped so discerning and scientifick an observer as M. Le Vaillant. I can only wonder at his having passed over the other groups without notice, such for instance as the *Trichoglossi*, the structure of whose tongue appears to have been long familiar to ornithologists. Had he given scientifick instead of provincial names to the groups which he pointed out, my task in referring to his labours would have consisted only in quoting these names, as I have quoted those of M. Vieillot or M. Illiger. But it was not M. Le Vaillant's custom, nor was it consistent with his views, to designate his subdivisions by the usual terms of science. It does not however follow, that, because he was inimical to scientifick names, others should be debarred from conferring them. And it consequently may be seen that some of the best known and most interesting groups in ornithology are those which M. Le Vaillant first pointed out, but which succeeding naturalists united more uniformly by the usual technicalities to the ranks of science. I shall instance the genera *Indicator*, *Phœnicophaus*, and *Coccyzus* of M. Vieillot, which correspond with the groups *Indicateurs*, *Malcohus*, and *Couas* previously pointed out by M. Le Vaillant. When in the course of my inquiries I had occasion to refer to the groups which had been already noticed by M. Le Vaillant under the names of *Perruches à queue en flèche*, *Perruches à large queue*, and *Perruches-Aras*, I followed the long-established and approved of practice of

assimilating them to other equivalent scientific groups by terms equally scientific. And, in describing and dwelling upon the species of *Palæornis*, *Platycercus*, and *Psittacara*, I feel some confidence that I may be considered by you, Gentlemen, and those who are equally aware of the nature of my pursuits in science, to have had some more laudable object in view than the miserable reputation of conferring a name.

M. Kuhl concludes this list of the writers on the *Psittacidae*;—the list at least of these who are named; for there are still others alluded to by the critick, with whom we may yet hope to be made acquainted by his means, who "have truly advanced this department of Ornithology without overloading it with new and useless denominations." In a former number of this Journal\* I have expressed my sense of the obligations due to M. Kuhl for his Monograph on this family. By referring to my observations it may be seen that he has divided it into six primary groups, none of which in any respect come in contact with Dr. Horsfield's and mine. Ours in fact are subdivisions of two of his sections. By referring to the same observations it may also be seen, that these groups of M. Kuhl are *not* "très-bien distingués" according to the usual practice of naturalists; and that, in contradiction again to the assertion of the writer in the "*Dictionnaire*," they are distinguished by names.

I fear, Gentlemen, you will consider that more attention has been bestowed upon these trivial points than they merit. I have not however entered upon this defence of Dr. Horsfield and myself from a conviction of the importance of the attack made on us, but for the purpose of exposing the spirit in which this attack has been made. Would that our views had been more ably canvassed, and by an opponent, and in a mode, more worthy of our reply! In such a case the higher principles of the science might have been discussed with advantage to both parties, and the truth eventually have been elicited by the collision of opposite opinions. At present it is our misfortune to have to deal with mere assertion unaccompanied even by an attempt at proof, and unqualified condemnation without the decency of an argument to support it.

\* Vol. II. p. 48.

Yet amidst the dearth of interest that pervades the present controversy,—if controversy it can be called,—some points of importance occasionally exhibit themselves; and to one in particular which involves a question of some moment in nomenclature I shall beg leave more closely to draw your attention.

In looking to the observations contained in this letter, and to those in a former volume,\* which referred to the groups of the *Falconidæ*, you cannot have failed to observe that an attempt has been made, by the opponents of the modern genera in Ornithology, to introduce these very genera under the denomination of sections, and with names derived from their own language, in preference to names according with the usual language of science. Although the title of genus is denied these groups, still are they virtually separated as genera, virtually characterized as genera, and virtually named as genera. The whole credit of forming the group, as well as the name thus falls to the share of him who by the simple process of sinking the title *genus*, and the scientific name of the first characterizer, appropriates the group to himself. In this manner the *Astur* of M. Bechstein, or the *Milvus* of M. Cuvier, may be claimed as the property of M. Desmarest or M. Temminck, or any other disclaimer against new genera, under such denominations, translated for the most part from the original, as *les Autours* or *les Milans*. This attempt at superceding the use of scientific names by the introduction of French names is beginning to be carried to an extent which leaves no doubt of the ultimate object in view. In almost all the professed works of science, it is the French word that is quoted, and not the scientific. † In the very "*Dictionnaire*" before us the same language furnishes the title of every article to which we are to refer, whether be-

\* *Vol. I. p.* 189.

† A single instance will point out the extent to which this practice may be carried. M. Vieillot some time since characterized a most important and well-defined group among the *Laniadæ* which he named *Thamnophilus*. M. Temminck introducing this genus into his "*Manuel*," gave it, as is customary a familiar name, that of *Batara*. Having occasion to refer to this group, which decidedly is M. Vieillot's, the naturalist of the "*Planches Coloriées*," looking only to the familiar name which he himself had given it, considers it and calls it his own genus. His words are "*mon genre Batara*." [Pl. Col. Art. *Barita destructor*. pl. 273.]

longing to a genus or a species. It is *Perroquet* we must consult, not *Psittacus*. The French word is every where the protagonist of the piece, and if the scientific name is at all introduced, it is in the character of an humble companion in the suite of synonyms. If this practice is not met by us with decided opposition in the outset, it will gain a head against which we shall in vain endeavour to contend. I do not oppose this mode of nomenclature on the narrow ground of every language having an equal right with the French to become the language of science: but upon the broad principle that there should be but one common language in science;—that every nation should unite in one universal mode of nomenclature which could be generally understood;—and that naturalists should endeavour to imitate the harmony observable throughout the objects they cultivate, by the only means in their power, however humble these may be,—a corresponding harmony in their language. In choosing this common language it is unnecessary to contend for the superiour claims of that which is founded on classical authority. Time and science have equally sanctioned the use of it. No modern terms, however important to the nation which furnishes them, could be otherwise than trivial, and sometimes even ludicrous, in the eyes of others, in comparison with words derived from a Greek or Roman source. The contentions that so frequently break out among the chief introducers\* of these familiar terms sufficiently proves the instability of the foundation on which they wish to erect their nomenclature. And it certainly is from no blind partiality that I would bestow a preference on such words as *Plyctolophus*, *Macrocercus*, *Pezoporus*, or even *Palæornis*, over such names, although sanctioned by the pen of a Buffon, as *Cricks*, and *Papegais*, *Peruches* and *Perriches*.

I have already mentioned that objections have been started against the names of some of my groups. These objections I shall now briefly notice, not because I consider them of importance, but to point out how far the same spirit of cavilling without

\* See particularly the observations of M. Vieillot in opposition to some of M. Temminck's familiar names; [*Nouveau Dict. d'Hist. Nat. Art. Ornithologie*,] and M. Temminck's in answer; [*Manuel, Introd. p. xii.*]

any just grounds pervades the whole of this criticism in the "*Dictionnaire*." The term *Palæornis*, for instance, is asserted to be inapplicable to all the species comprised in the group for which it stands,—“there being,” as the critick declares, “but one species of *Psittacus* known to the ancients,—namely the *Psitt. Alexandri*.”

I would here ask this writer whether he imagines that every species in a group partakes equally of the characters of the type, or is pointed out with equal significance by the name assigned the type, when that name happens to be expressive of some attribute or quality? If such is his opinion, he will find few natural groups in modern arrangements that will exactly square with his views. If he goes back to the days of Linnæus, he may notice that truly accurate observer referring to the “*notæ aberrantes*,” which distinguish some species of a group from those which are typical in it, and which nevertheless do not virtually detach these species from it. A significant name stands on the same ground as a character; and does not lose its general applicability to the group on account of the deviation of some species from the type, or “*ob speciei notam aberrantem*.” But even were this not the fact, the writer's observations are totally inapplicable to the case now before us. *Palæornis* is the name of a genus, not of a species or individual. And the critick must prove his censure to be correct, by shewing that this genus or group was not known to the ancients,—an assertion even by his own admission contrary to the fact,—and not by objecting that any of the species were unknown to them. In naming a *Parrot*, we will say for example, *Palæornis erythrocephalus*, we do not advance the proposition that the bird so named is a *red-headed bird known to the ancients*, but that it is the *red-headed species of a group which was known to them*. Even a New Holland species may be, and indeed has been, found, which as a species must be decidedly considered as unknown to classical times, but which, by possessing the same character as this ancient group, must be included in it. And this being the case the name of *Palæornis*, as generick, is strictly applicable to it.

But where has this writer discovered that one species only of

*Parrots* was known to the ancients? Ælian, no slight authority on such a subject, expressly states the contrary: and had the writer in the "Dictionnaire" taken the pains to read the paper which he has undertaken so unequivocally to condemn, he would have found his censures as little founded upon fact, as upon the accurate modes of reasoning. From the following passage of the Greek authour quoted in that paper [p. 64.], it appears that at least three species of *Parrots* were known in ancient times.—*Ἐν Ἰνδοῖς μανδάρων σιττακὸς οὄρνις γινέσθαι.*—ΓΕΝΗ ΤΡΙΑ ΑΥΤῶΝ ΑΚΩΩ.\*

I have not the good fortune of a personal acquaintance with M. Desmarest: I know him only by his writings. But, with that proneness which we all feel to exalt the votaries of the science we ourselves pursue, I have been accustomed to class him in my imagination among those higher naturalists, whose qualifications make up the *beau ideal* of a man of science. Familiarized with the writings of our earlier ornithologists, of Ray and Willoughby, of Pennant, White and Montague, and conversant with the modes of thinking and discussing that belong to most of the living naturalists of this country, I had been led into the opinion that it is the characteristick of a man of science to unite to a knowledge of his immediate pursuits, the accomplishments, and the courtesies of a gentleman. I had equally persuaded myself that, amongst these accomplishments, a knowledge of classical literature was at least a valuable embellishment, and an adherence to the rules of fair and legitimate discussion, a qualification that was essential. How great then was my disappointment, when I perceived the name of M. Desmarest subscribed to an article, where on a classical subject an unpardonable ignorance was betrayed of classical literature, and where at the same time the common rules of justice and courtesy were violated by the indiscriminate abuse of a paper, which appears not merely not to have been studied, but not even to have been read!

I shall not however allow my good opinion of M. Desmarest to be so easily overturned. I shall quote his own words in his own vindication; and I shall appeal to M. Desmarest when speaking the sober language of science, from M. Desmarest when scattering

\* *Hist. Animal. Lib. xvi. c. 2.*

the random and inconsiderate hallucinations of criticism:— In the former character he simply declares the fact,—“*Les anciens ont connu plusieurs perroquets, parmi lesquels le plus célèbre est la perruche envoyée de l'Inde par Alexandre*” [p. 10.] —; in the latter capacity he either forgets this fact, or wilfully misrepresents it;—“*Le nom qu'il [le genre *Palæornis*] reçoit semble indiquer que tous les oiseaux qu'il renferme étoient connus des anciens, et cependant il n'y en a qu'un seul, la perruche d'Alexandre*” [p. 20.]—What inference are we to draw from the contradiction that thus sets these adjoining pages of this writer at variance? Are we to conclude that it is Homer himself that nods? Or rather have we not two Homers “in the field”?

My genus *Platycercus* is equally unfortunate as *Palæornis*. The name, as it appears by the critick's account, is inapplicable to several species enumerated in the group, namely *Plat. Pæcificus*, *Ulietanns*, *cornutus*, and *auriceps*, inasmuch as these species have narrow and pointed tails, [queues aiguées et pointues,] not broad tails [queues plates] as the term would import. I should here, Gentlemen, apply the same observations respecting the aberration of character in the extreme species of a group which I have advanced in the preceding case of *Palæornis*, did I not conceive that I should be trifling with your time and that of your readers, by not at once meeting the assertion of the writer in the “*Dictionnaire*” by a decided contradiction. The species enumerated above certainly form a small minour group in the genus, as I have myself elsewhere observed. They are geographically separated from the others, being found in the Australian islands, not on the continent of New Holland; and deviating from the typical species by some subordinate variations of character, they probably will hereafter form a new genus when further subdivision becomes necessary in this branch of the family. But although the tail of these species is more graduated than in the typical species *Plat. Pennantii*, and thus points out the passage to *Pezoporus*, it is yet so conspicuously broad at the base and centre, as to be fully entitled to the character I have assigned it of being “*lata, depressa*,” and thus to bear out the applicability of the title *Platycercus* to the whole group. The three last mentioned



species of this group are of rare occurrence. I have met with specimens of them only in the British Museum; and there only I believe the greater part of them are still to be found.\* These specimens are not in the best preservation, but they evidently accord with the characters I have assigned them, as may be judged from the figures given of them in a preceding volume of this journal. But although these species are rare, the *Plat. Pacificus* has become of late very abundant in our collections, and I have thus been enabled to speak with certainty as to its characters. I have had a living specimen for months in my collection, and have besides seen numbers alive in this town; where they have been the subject of general admiration, not merely on account of the length of their *tarsi* and the consequent activity and freedom in running and jumping which so strongly distinguishes them from the generality of *Parrots*, but on account of the equally distinguishing breadth and depression of the tail.†

\* Although it is rather a bold step to assert that any writer would describe the characters of birds without having seen the birds themselves, particularly when he opposes the opinions of another writer on the same subject, I would almost venture to suggest that the writer in the "Dictionnaire" had never seen the birds in question. M. Kuhl described these species from the specimens in the British Museum; and looking only to the one conspicuous character, the length of the *tarsi*, he classed them with the *Pez. formosus*, Ill., which is distinguished by its length of limb. He was not aware that all the *Perruches à large queue* have elevated *tarsi*: and that the species alluded to would thus have more properly been arranged in that group on account of the form of their tail. Now it appears probable that the writer in the "Dictionnaire" looked, not to the birds, but to M. Kuhl's Monograph; and finding them arranged with a bird that has a narrow cuneated tail, he took it for granted that their tails must also be "aiguées et pointues." Whatever may have been the cause, he certainly is in error respecting the fact.

† It happens by a rather curious coincidence of circumstances that the only, or at least the best known group in Ornithology which has been formed by M. Desmarest, has a name derived from the same source as *Platycercus*. I allude to his genus *Platyrhynchus*. It also happens, that the same characters, *mutatis mutandis*, would answer for both members that respectively supply the names. The bill of his group is broad and depressed at the base and centre, and tapering towards the *apex*: so is the tail of my genus. A horizontal section of the bill of *Platyrhynchus* would accurately represent the tail of *Platycercus*. M. Desmarest ought to be more cautious than to permit a censure to pass under his authority upon a mode of nomenclature which is sanctioned by his own practice.

One observation more and I have done. The late M. Kuhl, in his Monograph of this family, introduced a practice which well deserves to be imitated, that of placing in a separate station at the end of his Paper all the published species which he had not himself been able to examine, or which had not been described from authentick sources. Among these doubtful species was the *Psitt. pyrrhopterus* of Dr. Latham, which, having been described from a single specimen, and a specimen no longer it appears in existence, or capable of being referred to at the time M. Kuhl wrote his Monograph, might with some appearance of justice be assigned this doubtful station. Two living specimens however lately arrived in this country from the Sandwich Islands, and came into my possession; they were immediately characterized and figured in this journal. In the very face nevertheless of this evidence of its existence, the bird, although referred to in the "*Dictionnaire*" as published in this country, still retains its station in that work among the doubtful species. Here then we have a bird, described by one British naturalist, redescribed by a second, and figured by a third; and yet in the eyes of M. Desmarest, or rather I should say, of his inefficient substitute, it is not of sufficient authority to hold a place among authenticated species.

I trust, Gentlemen, that, in thus defending Dr. Horsfield and myself against the uncalled for attack that has been levelled against us, I may not be supposed to be actuated by hostile feelings to the French naturalists in general. Those readers who may have paid a casual attention to my exertions in science, must be aware that I have been neither ignorant of the eminent services in Zoology of our continental neighbours, nor backward in acknowledging them. If there are any of those my exertions upon which I can allow myself to indulge a moment's pride, it is the endeavour, in union with some of the most enlightened Zoologists of this country, to break through the restricted mode of studying nature that has retarded the growth of the science among us, and to open the eyes of our rising naturalists to the improvements of the continental schools. It has been one of our chief objects to point out the true merits of the founders of these schools;—not, however, with the view of following in their wake, in timid sub-

mission to their ordinances, but in the hope of emulating their progress and maintaining an equal line in the advance ;—of assuming, in short, that forward station in Zoology, which the genius, the industry, and the mighty resources of this Empire confer upon us as a right, and impose upon us as a duty, to assert. Happy am I in feeling myself authorized to add, that the spirit which is diffusing itself among our Zoologists promises the happiest results to this our cause. We feel strong in our first advances. We have chosen our path :—not having fallen into it by blind chance or wayward prejudice ; but having selected it from all that lay before us, with free and deliberate preference. And in full confidence, as far at least as human reason and foresight can inspire us with confidence, of having chosen the right way, we shall steadily pursue it, uninfluenced either by the secret or undisguised opposition of false friends or open enemies, abroad or at home. Truth is our object ;—truth if possible in amity with all—in cordial co-operation with all ; but,—if that boon be denied us—still truth and truth alone.

I must conclude, Gentlemen, this long discussion into which I have been forced most unexpectedly, and entirely in opposition to my wishes and feelings. I conclude it however, as I hope I have pursued it, without any sentiments or expressions of resentment. My feelings are more those "of sorrow than of anger ;"—of sorrow, that the fair fame of a naturalist like M. Desmarest should be hazarded by being placed in contact with the ill-judged Article before us, and that the pages of science should be sullied by contentions such as these.

I have the honour to be,

Gentlemen, &c. &c.

N. A. VIGORS.

ART. XII. *Analytical Notices of Books.*

*An Introduction to Entomology: or Elements of the Natural History of Insects.* By WILLIAM KIRBY, M.A. F.R. & L.S. and WILLIAM SPENCE, Esq. F.L.S. Vols. iii. and iv. 8vo. pp. 732 and 634. Plates xxv.

To furnish a satisfactory analysis of any production on Natural History in a few lines, barely exceeding in number that of its sheets, must be at all times a task of extreme difficulty. It is one which in fact could never be attempted with any prospect of success unless where the work under examination was chiefly theoretical. By reproducing the conclusions arrived at by the author, and exhibiting some of the more convincing arguments adduced in support of them, a tolerably correct idea might in such a case be given. Where however the work, like the one before us, is almost entirely free from theory, and is devoted with very trifling exceptions to the exposition of facts, the attempt to analyse it becomes completely hopeless. The "Introduction to Entomology" is indeed itself an analysis of the numerous volumes devoted to the history of Insects which have preceded it; all that is valuable in their contents being condensed in its pages within the smallest compass consistent with perspicuity. The information derived from these sources may consequently be regarded as beyond the reach of a still farther abridgement. On the other hand the novel facts with which it abounds, and the new views on many most important points which are illustrated in its course, are almost equally beyond our power to analyse: they are too numerous for the space we could afford to them, and too interesting to be condemned to the cursory notice to which we must be confined. Were we indeed to set aside the whole of the materials derived from the works of previous authors, and to advert solely to those novelties for which we are indebted to Messrs. Kirby and Spence, a review conducted on our usual principle of retaining all the important facts presented to us, would become by far too extensive. Each of the

Letters into which it is divided would require an article more extended than the present, and the whole of one of our numbers would scarcely suffice to convey an adequate outline of the vast mass of important information embodied in these volumes. Our notice must therefore be limited almost to a mere enumeration of some of those striking points by which the attention of the scientific reader will be most forcibly arrested. The remainder we must, though reluctantly, pass by, with the single observation that there are few pages of the work from which Entomologists, even of the highest order, will not derive at once information and amusement.

Of the contents of the first two volumes of the *Introduction to Entomology* it is unnecessary for us to speak, as they are doubtless well known to every one of our readers. In the present volumes, which complete the work, the subjects are thus arranged: definition of the term insects; states of insects; their external anatomy; their internal anatomy and physiology; their diseases; their senses; Orismology, or explanation of the terms employed in Entomology; systems; history of the science; geographical distribution of insects; methods of collecting and preserving them; and the mode to be pursued in their investigation.

On the first of these subjects, the definition of the term Insect, Messrs. Kirby and Spence differ from all previous systematists, the characters employed by them being designed to embrace all those annulose animals in which respiration is performed by means of tracheæ. Their *Insecta* consequently correspond with the *Insecta* and the Trachean *Arachnida* of Latreille and Lamarck; with the *Insecta*, *Acari*, and *Myriapoda* of Dr. Leach; and with the *Mandibulata*, *Haustellata*, many of the *Arachnida*, and nearly the whole of the *Ametabola* of Mr. W. MacLeay. The only annulose animals excluded are the *Arachnida*, distinguished by having sacs for respiration, and the *Crustacea*, in which that office is performed by gills. The function thus relied on for their chief distinction is one of undoubtedly primary importance, and the division deduced from it is shown to be strongly supported by the differences observable also in the systems of circulation, digestion, and generation. The relation borne by insects to other

animals is also pointed out, and their resemblances in many particulars to the more perfect of the *Vertebrata* are traced with some detail. That, though usually minute, they occasionally exceed in size animals of a higher organization, is shown by a curious table of the comparative magnitudes of insects of the different families.

The succeeding Letters are devoted to the different states of Insects. The authors combat the hypothesis recently advanced by Herold, that the successive skins of the caterpillar, the pupa-case, the future butterfly, and its parts and organs, except those of sex, do not pre-exist as germs, but are formed successively from the rete mucosum by a vis formatrix. Against this they argue at considerable length, and adduce several weighty reasons for the preference they give to the older opinion of Swammerdam, that every caterpillar, at its first exclusion, contains within itself the germ of the future butterfly. Through their succeeding stages of Egg, Larva, Pupa, and Imago, the history of insects is traced in that attractive style and with that perspicuous arrangement which characterize the work. The number of eggs laid by insects, the moulting of the larvæ, the cocoons of the pupæ, their transformation, and especially the development of the wing of the perfect insect from the almost shapeless mass formed by it in its rudimental state, are among the topics most ably discussed in this section. The differences existing between the sexes are also explained with considerable detail. But the most striking novelty in this department, as connected with system, is the extension of the views of Mr. W. MacLeay relative to the analogies borne by the larvæ of certain insects to the *Ametabolous Annulosa*, into other orders besides the *Coleoptera*, in which alone they had before been extensively developed. In addition to the resemblances of form traceable between larvæ and the *Ametabola*, many are pointed out between them and the various orders of *Crustacea*, the *Arachnida*, and even *Mollusca*: on the latter analogy it is however probable that some doubts may be entertained. Of the fifteen types of larvæ thus obtained, characters and examples are given; and their occurrence or prevalence is carefully traced, through each of the orders of insects respec-

tively, to the greatest extent that our limited acquaintance with them will at present permit.

Of the high scientific value of the information presented by the Letters on the external Anatomy of Insects it is almost impossible to speak in terms of sufficient praise. To estimate rightly its importance it would be necessary to have devoted, like Mr. Kirby, years to the investigation, and to have carefully examined, with an acumen equal to his own, almost every entomological collection in this country and many in foreign lands. On this subject it may safely be asserted, that no one need fear to lower his own importance by exclaiming to our authors, in the words of Linné on another entomological occasion, *Estote magistri mei*.

The immense mass of novelty introduced in this department, a novelty of facts and not a mere pernicious alteration of names, is preceded by a synoptical table of the parts into which the insect skeleton is resolvable. The whole of these are subsequently treated of with a detail which leaves nothing to desire. The description of the head, and of those essentially important portions of it, the trophi or organs by which the food is taken, is particularly laboured; but we cannot even enumerate the many striking facts deduced from the accurate dissections to which insects of every order must have been repeatedly subjected during its composition. Even for the parts of the perfect mouths definitions are given more precise than any previously proposed; while to the imperfect ones are applied denominations so correctly circumscribed as to obviate in future that misapplication of terms by which considerable confusion has hitherto been produced. In connexion with the head, another set of organs is now for the first time pointed out as appertaining to a sense usually supposed to reside in other parts of the body—that of smelling. The Clypeus is regarded as a nose, Nasus, and the Rhinarium, situated between this part and the lip, is considered as analogous to the nostrils of quadrupeds. That the sense in question resides in this situation seems almost to be established by the facts adverted to in a subsequent Letter. The trunk is submitted to an equally minute investigation with the head. It is divided primarily into Manitrunk and Alitrunk, the anterior pair of legs being denominated

Brachia, their functions frequently resembling rather those of arms. The parts composing the three segments of the thorax are minutely described, and their internal processes are especially attended to. The structure, forms, and areas of the wings, their appendages and modifications; the legs, their articulations and locations, and the parts of the tarsi, are also treated of in detail. This portion of the work furnishes indeed in every respect by far the most complete view, both general and partial, of the external anatomy of insects that has ever appeared.

The Letters on the Internal Anatomy and Physiology are devoted in succession to the systems of Sensation, Respiration, Circulation, Digestion, Secretion, Reproduction, and Motion. Each of these presents too vast a field to be touched on by us; but we cannot refrain from noticing the opinion advanced by Messrs. Kirby and Spence, that the nervous system of insects is of a mixed kind, combining in itself both the cerebro-spinal and the ganglionic systems. On the external resemblance borne by their first ganglion to the brain in vertebrated animals it must be confessed that too much stress ought not to be laid; but their capability of domestication and of education, or in other words of acquiring habits not instinctive, their memory, and their possession of that degree of intellect and judgment which enables them to profit by the notices of their senses, appear to us, as to our authors, to furnish so many convincing proofs of the necessity of a common nervous centre. The recent anatomical discoveries of Müller, which will be noticed in our next number, are also adapted to illustrate and support, in a very striking and unexpected manner, the opinion just alluded to.

At first sight the subject of the Letter on the Diseases of Insects may appear to partake of the ludicrous. They are however at times annoying to man, those of bees and silk-worms being occasionally extremely detrimental to their proprietor, and the hopes of the aurelian in his choicest larvæ being frequently blighted by them. Unfortunately the healing art has yet effected little to remedy them. Their history is in many respects interesting, and the descriptions of various malformations and deformities are particularly curious.



On the organs of the Senses in insects there exists so considerable a difference of opinion, that the Letter on them will probably prove one of the most generally attractive. That insects possess senses equivalent to, if not identical with, those of the human race, is rendered evident by numerous facts with which all are conversant. Few however entertain precise ideas as to the organs by which are received the impressions of external objects. Our authors regard the Antennæ, relative to whose functions so much discussion has taken place, as the analogues of ears; the sense of hearing being however probably modified by some connexion with that of touch in a manner of which we can form no clear conception. Touch, in a passive sense, appears to be pretty generally diffused over the body; active touch is stated to be confined to the antennæ, palpi, and arms. Smelling is, as we have before observed, referred to the nose and to the space included between it and the lip: and taste to the tongue. With respect to the organs to which sight is entrusted no difficulty appears to exist.

The Orismology of this department of Natural History is another of those topics to which, as to the external anatomy, the attention of the authors has been especially directed. The importance of a well-defined system of terms is too obvious to require illustration. Without a thorough and clear acquaintance with them it would be impossible either to receive or to convey correct scientific information. The terms proposed by Messrs. Kirby and Spence seem perfectly adapted for general use. They are precisely defined, and as they are by far more numerous than those previously in use, they of course comprehend a greater number of those variations in substance, forms, surface, and relative situation, on which reliance must always be placed in the investigation of insects. Each of them is moreover illustrated by a reference to that part of some particular insect in which it is found to exist, and a correct idea of its precise meaning is thus ensured. In the nomenclature of colours this plan is almost essential, words alone being scarcely capable of conveying accurate impressions of numerous shades which are readily distinguished by the eye.

The Orders adhered to in the letter devoted to the System of Insects, are those proposed in the first volume of the work. On this occasion the essential characters of each are given, and these are accompanied by observations on their connexion with each other, and on the tribes of which each is individually composed. Of the existence of a primary division of winged insects into *Mandibulata* and *Haustellata*, doubts are entertained; and it is stated that, on the principle of their formation, a third section should be adopted to include many of the *Hymenoptera*, by which the food is taken by lapping. The analogies which are considered to exist between the Orders, approach nearly to those remarked by Savigny. They are drawn from the resemblances of the perfect insects, and thus differ essentially from those deduced by Mr. W. MacLeay, from the metamorphosis. The relative value of the groups, both primary and subordinate, into which insects are divided, is explained, and they are made to succeed each other in the following order: class; subclass; order; suborder; section; subsection; tribe; subtribe; stirps; family; genus; and subgenus. For nearly the whole of these divisions uniform terminations are proposed; a plan which, could it have been originally carried into effect, would have admirably expressed the comparative importance of the group intended to be mentioned, but which would now necessitate too many changes in received nomenclatures to become ever available. The position assigned to insects in the general system is in immediate apposition with the *Vertebrata*.

The History of Entomology is divided into seven Epochs; the Era of the Ancients; the Era of the Revival of the science after the darkness of the middle ages; the Era of Swammerdam and Ray, or of the Metamorphic System; the Era of Linné, or of the Alary System; the Era of Fabricius, or of the Maxillary System; the Era of Latreille, or of the Eclectic System; and the Era of MacLeay, or of the Quinary System. The sketch is clearly and candidly drawn up. Each of the eras passes successively in review; the system proposed in it is examined, and the principal alterations suggested by real science, or by a mere affectation of novelty, are explained. Hence a general view

is obtained of the progress of Entomology from its first dawning as a science to the present advanced state of knowledge respecting it. A very curious illustration of the Linnean system is given in a copy of Latin verses by the poet Gray, in which the characters assigned to each of the genera are exhibited within the compass of a single hexameter.

In the letter on the Geographical Distribution of Insects, many valuable facts are thrown together in illustration of the limits within which certain families appear to be either almost entirely confined, or at least especially prevalent. The enquiry is one which is now regarded with considerable interest, and for the elucidation of which fresh materials are daily accumulating. Under the same head much information is imparted relative to the stations and haunts of insects, the seasons of their appearance, and their times of action and repose, which will materially assist the collector, for whose instruction the subsequent letter is also designed. In this the instruments and methods usually employed in their capture are fully described; and the best plans for preserving and arranging them are pointed out. The want of such a manual as is here furnished has frequently operated to paralyze the exertions of the unpractised collector, and we are therefore gratified to observe it embodied in a work which will find its way into so extensive a circulation as the present. The plan recommended to be pursued by the student in the investigation of insects, will also be found highly serviceable to him, and will doubtless receive that attention to which every observation on this subject, from such a quarter, must be entitled.

The Appendix presents a list of the authors quoted, which is so arranged as to afford some idea of the works which are most necessary to an entomological library; together with very copious indexes, an essential appendix to every work of science, and tables of reference to the numerous objects represented in the well-filled illustrative plates. The descriptions of the organs of generation and of the coitus are here also given, but are shrowded from many of the readers of the more popular portions in a learned language, which has evidently been resorted to for

the sake of decency. A curious instance of the zeal with which occasions for inculcating lessons of piety and morality has been sought after here occurs, in the hints given for the guidance of young ladies on subjects of which they should scarcely be suspected to have even dreamed, and in a language too which few of them can understand. So slight a slip of the pen needs however no apology in the kindly and good-hearted feelings which evidently dictated it.

Confessedly imperfect as is the preceding sketch of this arranged Encyclopædia of entomological knowledge, we feel less hesitation in presenting it to our readers, since we are convinced that the perusal of the volumes themselves will be universally sought after. It would be almost superfluous to add, that they will at once gratify and instruct every admirer of that extensive and interesting department of Zoology of which they treat. The task undertaken by the learned authors was most arduous, and one from which men of less energetic minds must have shrunk in despair. To maintain and even to increase by the publication of a work almost essentially popular, the high scientific characters which they had previously obtained, required a fortunate combination of talents of no ordinary description. To have succeeded in such an undertaking to the extent which has been effected by them, an extent probably greater than their most sanguine hopes could have anticipated, affords the most convincing proof of the admirable nature of the plan pursued by them; a plan, be it added, formed upon no preceding model, but meriting as a new invention, to be held forth to the imitation of others. By their excellent Introduction more general attention has been attracted within a few years to the study of Entomology than would have been produced in centuries by a repetition of those dry technicalities which so frequently check the ardour of the beginner, and occasionally disgust him at the very threshold of the science. The happy union of amusement with instruction obviates this difficulty: the learner is interested in the wonders displayed before him, he pursues the study with vigour, and while endeavouring to verify by experiment the statements of his authors, becomes himself acquainted with new facts; these he

in turn imparts to the world, and thus, should ambition urge him so far, he is at length enrolled among the more distinguished votaries of that science in which he has found the recreation and delight of his leisure hours. That such results will again and again be produced by the labours of Messrs. Kirby and Spence, we confidently expect. In other departments of Zoology the same end would doubtless be attained by the employment of similar means, and we do hope that these means will not be suffered to remain wanting while we have those among us whose talents and acquirements have peculiarly fitted them for supplying the deficiency.

---

*The Genera of Recent and Fossil Shells.* By G. B. SOWERBY, F.L.S. With original Plates. By J. D. C. SOWERBY, F.L.S. No. xxviii.

THE whole of the four genera illustrated in the present number are new; two of them being now, for the first time, separated from *Voluta*, Lam., one from *Venus*, Lin., and the remaining one being founded on an undescribed species of *Cirripeda*.

The first of these genera, *CYMBA*, is thus characterized: “*Testa* levis, admodum ventricosa, plerumque uni-color. Epidermis lævis, fusca, tegmine quasi vitreo partim vel omnino obducta. Apex rudis. Spira brevissima. Columella curva, 2-3-plicata, plicis magnis, acutis. Labium externum haud reflexum. Basis profundè emarginata. Apertura hians. Operculum nullum. *Caput* grande, planum, tentaculis remotis, oculis pone tentacula positis, mediocribus. Pallium magnum? Pes maximus. *Animal* carnivorum. *Habitat* marinum in calidioribus mundi veteris regionibus. It includes six species, formerly part of the section *Gondolieres* of Lamarck's *Voluta*, and is illustrated by figures of *C. Neptuni* in a young state, of *C. Cymbium*, and of *C. proboscidalis*.

The second genus *MELO*, also forms part of the same section of *Voluta*, Lam. The character assigned to it is as follows: “*Testa* ventricosa, levis, ut plurimum colore vario. Epidermis

lævis, viridi-fusca. Apex mamillaris. Spira brevis. Columella vix recta, 3-4-plicata, plicis magnis, acutis. Labium externum haud reflexum. Basis profundè emarginata. Apertura hians. Operculum nullum. *Caput* grande, planum, tentaculis laterali-bus, remotis, oculis pone tentacula positis, magnis. Branchiæ satis magnæ, dextra major. Pallium mediocre. Pes maximus, ovalis." The animals of this genus resemble those of the preceding in being carnivorous, and in inhabiting the seas of the warmer regions of the old world. The species are divided into two sections, 1. "Spirâ inermi," including only the *M. Indicus* (*V. Melo*, Auct.) which is figured, together with its young state, *V. Præputium*, Chemn. and 2. "Spirâ spinis fornicatis armatâ," embracing six species, and illustrated by the figure of a new one under the name of *M. umbilicatus*.

For the characters of, and observations on, the two preceding genera, Mr. Sowerby acknowledges himself indebted to W. J. Broderip, Esq. who has kindly in part anticipated the information he is about to publish in his Monographs of the *Volutidæ*, for which his extensive collection affords the most ample and satisfactory materials.

PULLASTRA, in which are included the *Venerupes* of Lamarck, together with such of his *Veneres* as are allied to *V. pullastra*, is thus defined by Mr. Sowerby: "Testâ æquivalvi, transversâ, inæquilaterali, latere antico breviorè, dentibus cardinalibus in utrâque valvâ tribus contiguis, interdum apicibus subemarginatis. *Impressiones musculares* duæ laterales, subrotundatæ. *Impressio muscularis pallii* sinu magno. *Ligamentum externum*, valvarum marginibus dorsalibus suboccultatum." It is illustrated by figures of the *P. vulgaris*, *Venus Pullastra*, Auct., of *P. litterata*, and of *P. papilionacea*.

The new genus of *Cirripeda* is described under the name of CATOPHRAGMUS: "Testâ subconicâ, apice pervio, basi adhærente, (valvâ testaceâ clausâ?) valvis octo, inæqualibus, lateraliter adjunctis, compositâ; valvis porro plurimis per series externas, circulares, gradatim minores, confertim co-ordinatis. Operculum bipartitum, valvis quatuor, anticis majoribus, compositum." As in the new genus *Octomeris* established by Mr.

Sowerby, at page 244 of our last volume, and figured in the Supplementary plates, the shelly cone immediately surrounding the animal consists of eight pieces, and the operculum of four; but in *Catophragnus*, the first shelly cone is surrounded by a second, equally composed of eight pieces, and this again by several sets of more and more numerous pieces gradually decreasing in size, bearing in this respect some analogy to *Pollicipes*. The genus is founded on two specimens in different stages of growth, one of which was received from Antigua, attached to a *Conia*. The trivial name affixed to it is *C. imbricatus*.

---

*Narrative of a Survey of the Intertropical and Western Coasts of Australia, performed between the years 1818 and 1822, By Captain PHILIP P. KING, R.N. F.R.S. F.L.S. &c. With an Appendix, containing various Subjects relating to Hydrography and natural History. 2 vols. 8vo. plates.*

To enter at any length into the general results of this interesting survey of the coasts of New Holland, would be foreign to the purposes of this Journal, in which we are bound to confine ourselves to the zoological information obtained during the progress of the expedition. It will be sufficient to observe that the whole of the Eastern Coast within the tropic was carefully surveyed, as well as the Northern and North-western Coasts, on each of which, and also at the Isle of France, were collected objects of Natural History, few certainly in number, (owing to the rarity of the occasions presented by the nature of the service, and to the want of sufficient space in the small vessel employed,) but by no means without that interest which arises from the novelty of some of them. A brief review of the Catalogues of the collections in the various departments of zoology, which form part of the Appendix, will best illustrate their value to the student.

The *Mammalia*, only six in number, present nothing worthy of remark: but of the fourteen species of birds collected, no less than four are regarded as new by Mr. Vigors, to whom Capt.

King acknowledges himself indebted for advice and assistance in this department. One of the new species, which is closely allied to the *Gracula viridis*, Lath., is considered as forming, together with that bird, a new genus provisionally described under the name of *MIMETA*, with the following characters: “*Rostrum* forte, subuarcuatum, subcultratum, mandibulis utrisque apice emarginatis; naribus basalibus, lateralibus, subovalibus, membranâ partim tectis. *Lingua* ad sugendum idonea? *Alæ* mediocres, rotundatæ; remige 1mâ brevissimâ; 2dâ et 6tâ æqualibus; 3tiâ et 4tâ ferè æqualibus, longissimis; 5tâ his paulò breviori: remigum 3tiâ ad 6tam inclusam pogoniis externis in medio gradatim productis. *Pedes* subbreves; acrotarsiis scutellatis, scutis quinque; paratarsiis integris. *Cauda* mediocris, ferè æqualis.” The stability of this genus, which has many external relations with the Orioles, rests entirely on the probability that the tongue is formed for suction. Should this prove not to be the case, the group, it is allowed, must of course fall. The new species described is the *M. flavocincta*, “flavoviridis, subtus pallidior, capite dorsoque fusco-lineatis, alis caudâque nigris viridi flavoque variegatis.” It differs from the *M. viridis* in the bill being somewhat higher, and more carinated, in the general distribution of the colours, and in being marked with yellow where the latter bird is white.

The remaining ornithological novelties relate merely to species. The *Hæmatopus picatus* “ater; corpore subtus, fasciâ alarum, uropygio, caudæque basi albis; remigibus primoribus totis nigris;” forms the second addition to this genus recently obtained from Australia. It approaches more nearly to the European species, the *H. ostralegus*, than to the *H. palliatus* of Temminck, or to the *H. niger* of Quoy and Gaimard. The *Sterna pelecanooides*, “alba; capitis vertice nigro albo-variegato; dorso, alis, rachibus albis,” deviates from its own genus, and approaches the *Pelecanidæ* by the smaller size of the membrane that unites the toes, by the dilatation of the side of the nail of the middle toe, and by the greater proportional length of the wings. The fourth new species *Larus Georgii*, is thus described, “L. albus, dorso alisque nigris; reatricibus albis, fasciâ mediâ atrâ.”



For the illustration of the *Reptilia*, nine in number, we are indebted to Mr. J. E. Gray, who considers four of them as new. One of these is peculiarly remarkable by the singular frill appended to the neck, which distinguishes it in a striking manner from the *Agamæ*, to which it appears in other respects to be closely allied. It is the type of the genus *Chlamydosaurus*, Gray, Ann. of Phil., and is thus described; "*C. Kingii*, *C. corpore luteo, nigro-variegato; squamis carinatis; pennulâ anticè serratâ; caudæ corpore duplo longiore.*" Another is referable to the genus *Phelsuma*, Gray, *ib.* where a short character of it, under the name of *P. ornata*, had been previously given. The third forms the type of the genus *Trachysaurus*, Gray, and is characterized as follows; "*T. rugosus*, *T. squamis dorsi rugosis, caudæ subspinosis; caudâ brevissimâ:*" and the fourth is the *Leptophis punctulatus*, "*L. squamis lævibus apice uni-indentatis, spinæ dorsalis triangularibus; caudâ quadrantali, tenui, squamis æqualibus;*" an interesting addition to the genus established by Mr. Bell at p. 328 of our last volume, to which another species collected by the expedition, the *L. spilotus*, (*Coluber spilotus*, Lacépède,) is also referred by Mr. Gray. The *Lacerta scincoides*, Shaw, is described as the type of the genus *Tiliqua*, Gray, *l. c.* under the trivial name *tuberculata*.

Among the Fish described, which are only seven in number, one alone, the *Teuthis australis*, is stated to be new. Mr. Gray, however, has since ascertained that it is probably the *Acanthurus triostegus*. He remarks, that seven or eight other species, and several interesting drawings, were brought home by Captain King, which may probably be novel, but which he fears to describe as such lest he should increase the confusion already existing in this neglected department of Zoology.

With the exception of a single species of *Annelida*, the whole of the *Annulosa* collected are illustrated by Mr. W. S. MacLeay. The number of species of insects enumerated or described in the Catalogue is 192, of which 130 belong to the class *Mandibulata*, 58 to *Haustellata*, and 4 to *Arachnida*. Of these eighty-one were previously undescribed; but the whole of them except two, are referable to genera already established or indi-

cated. The genera now first admirably described in detail are CARPOPHAGUS, the type of which is the *C. Banksiæ*, and MEGAMERUS, having for its type *M. Kingii*, a singular insect, bearing an affinity to *Sagra*, but differing from that genus in having setiform antennæ, correct mandibles, (almost resembling those of some of the *Prioni*,) and securiform palpi. In another respect the latter insect is extremely interesting, as the discovery of pentamerous tarsi in a genus so nearly allied to *Sagra*, has led Mr. MacLeay to investigate minutely those parts in the tetramerous and trimerous *Coleoptera* of the French Entomologists; the result of which examination, as developed in a paper read before the Linnean Society at the commencement of the last year, has been to establish that those divisions are utterly unfounded in fact. Both the *Carpophagus Banksiæ* and the *Megamerus Kingii* are figured, together with the *Phasma tiaratum*, a rare and singular species.

Of *Cirripeda* only one species is mentioned; and of *Radiata* no more than five: the species of *Acrita* are twenty-five in number; but the whole of these have been described.

The *Mollusca*, illustrated by Mr. J. E. Gray, are more numerous, comprising one hundred and eleven species, twenty-three of which are new. None of them however present any striking novelty of form; those which were previously undescribed being referred to the following genera; *Venus*, *Cytherea*, *Lima*, *Monodonta*, *Rissoa*, *Solarium*, *Phasianella*, *Scalaria*, *Littorina*, *Nassa*, *Claratula*, *Conus*, *Marginella*, *Strombus*, *Bulla*, *Cyclostoma*, *Chiton*, and *Haliotis*. To transcribe the characters of these new shells would too much extend this notice, and the reader who wishes to consult them must therefore be referred to the work itself. He will also be repaid for a perusal of the general narrative, by numerous occasional notices on such zoological subjects as presented themselves to Capt. King's observation.

It is gratifying to observe that the able navigator and zealous naturalist, to whom we are indebted for these volumes, was instructed by the Secretary for the Colonies "to endeavour to obtain information" relative to "the animals, whether birds, beasts, or fishes; insects, reptiles, &c." which might be observed

during the progress of the expedition. By the same authority directions were also given to "receive on board Mr. A. Cunningham, a botanist;" and also to "engage any other person, if there be such in the colony, who possesses a competent knowledge of Mineralogy or Natural History." If the services of any such person could have been obtained, considerable additions would doubtless have been made to the collections: without this assistance however they are extremely respectable, and, when his numerous other avocations are considered, they may even be regarded as highly creditable to the zeal and exertions of Capt. King.

---

*British Entomology; or Illustrations and Descriptions of the Genera of Insects found in Great Britain and Ireland. By JOHN CURTIS, F.L.S. Nos. xxii—xxiv.*

THE first of the numbers which we have now to notice exhibits 1. *Lebia turcica*, a species exceedingly rare in Britain. 2. *CLEORA cinctaria*, a species new to this country, and associated under the above generic name with the *Geometra abietaria*, *G. crepuscularia*, &c. 3. *Abia nigricornis* ♂ and ♀. 4. *Chironomus æstivus*, a new species of this very extensive genus of *Diptera* nearly allied to the *C. elegans* of Meigen.

In the twenty-third number are contained 1. *OBRIMUM cantharinum* ♂ and ♀; the former sex having been described by Fabricius and Panzer under the name of *Saperda brunnea*, and the female by that of *S. ferruginea*. The name of the genus has been adopted from Megerle, but his characters, if indeed they have been published, have not yet reached this country. It differs chiefly in its long and dilated, or subspinose, thorax from *Saperda* and *Callidium*, and is also peculiarly distinguished by the length of the first joint of the antennæ. 2. *SPILOSOMA Walkerii*, a non-descript species of a new genus allied to *Eyprepia*, and comprehending *Bombyx lubricipeda*, *B. menthastri*, &c. which are readily distinguished by their spotted bodies. 3. *Clavellaria marginata*, *Tenthredo marginata* of Linné, which Mr. Curtis suspects to be merely the female of the *Amerinæ* of the same dis-

tinguished author. 4. *Laphria nigra*, the only species of this numerous genus of *Diptera* which has yet been detected in England, where it is by no means common.

The twenty-fourth number comprises 1. *Hydaticus cinereus*, recently captured for the first time in this country by Messrs. Chant and Bentley. It is the *Dytiscus cinereus* of Linné, but not of Fabricius nor of Marsham. 2. *Vanessa Antiope*, with its larva. 3. *Saræa fasciata* of Leach. 4. *Merodon clavipes*, of which only two specimens have been taken in England.

An additional leaf is given in the last number for the purpose of being substituted for that containing the description of *Acilius cinereus*, the insect previously figured under this name being in fact a new species, to which Mr. Curtis has found it necessary to assign the name *A. caliginosus*.

In concluding our notices of the second volume of this important addition to our entomological libraries, we need only refer to our previously expressed opinions of the value of the work, and of the beauty and accuracy of the figures contained in it, and repeat our cordial wishes for its continuance in the same excellent style as that in which it has commenced. A third volume has since been completed, to which we shall advert in our next number.

---

*Histoire Naturelle des Mammifères, avec des Figures originales, dessinées d'après des Animaux vivans; &c. Par MM. GEOFFROY SAINT-HILAIRE, et F. CUVIER. Livraisons 52<sup>de</sup> et 53<sup>eme</sup>*

IN the present numbers of this valuable addition to the Natural History of the *Mammalia*, there is less than the usual proportion of novelty. The most striking feature exhibited by them is the dismemberment of the genus *Elephas*, for the purpose of establishing a new one under the name of *LOXODONTA*. It is somewhat singular that notwithstanding the very striking difference in form between the African and the Asiatic Elephants they should have been confounded together by Linné under the denomination of *Elephas maximus*. M. G. Cuvier first pointed out,

to the satisfaction of modern zoologists, the specific distinction existing between them, and employed to designate the former the name of *E. Capensis*, while to the latter was assigned that of *E. Indicus*. M. F. Cuvier has now advanced still farther, and has regarded them as the types of two genera, differing from each other as much as *Canis* from *Hyæna*, or *Lagomys* from *Lepus*. For the Elephant of Asia he retains the original generic name *Elephas*. The surfaces of its molar teeth present fasciæ of enamel irregularly festooned; while in those of the African Elephant, the type of the new genus *Loxodonta*, the enamel is disposed in lozenges. In addition to this striking distinction derived from the dentary system, M. F. Cuvier also enumerates the other characters which have hitherto been regarded as specific. The smaller, more elongated, and less irregular head of the African animal when compared with the Asiatic: the rounded forehead of the former, strongly contrasted with the deep depression in the middle of that of the latter: the ear of the former also twice the extent, while the tail is only half the length, &c.

Since 1681 no African Elephant has been seen in Europe until the young female figured by M. Cuvier, which is now alive in Paris, having been sent as a present by the Pacha of Egypt. Its habits, so far as those of a very young animal can be relied on, exhibit none of the ferocity usually ascribed to it, and are indeed fully as mild, intelligent, and tractable, as those of the Elephant of Asia.

The remaining novelties relate only to species. One of these is a new species of *Macacus*, *M. carbonarius*, which is closely allied to the *M. cynomolgus*, (*Simia cynomolgus*, and *S. cynocephalus*, L.) differing from it in fact only in the black, instead of tanned, colour of its face. It is a native of Sumatra.

The Beaver of Europe, M. F. Cuvier is now disposed to consider as specifically distinguished from that of Canada by the form of its head. Viewed in profile, instead of presenting a nearly uniform curve from the occipital bone to the end of the ossa narium, its outline is almost straight, being inflected only towards its middle; its sagittal and occipital project strongly, the

zygomatic arch is broad and much depressed, the whole cerebral portion is considerably elongated backwards, and the nasal bones advance far beyond the orbital process of the os frontis. These parts are strikingly less developed in the American Beaver, which also appears to be one-sixth smaller at the same age than the living European one now in the Jardin du Roi. In their habits there appears to be less to distinguish them than has hitherto been supposed. The European species evinces the same aptitude and ability in constructing a habitation as are exhibited by the Beaver of Canada, anecdotes in proof of which are related by M. F. Cuvier; nor can our readers fail to recollect the very striking exemplification of this propensity noticed at page 425 of our last volume.

---

In the preceding analysis we have endeavoured to embody the whole amount of the new views exhibited by the latest numbers which have reached us of the folio edition of the *Histoire Naturelle des Mammifères*. At the same time we received also several of the earlier numbers of the quarto edition of the same work, which has long been promised to the public. Their appearance was at once a source of gratification and of regret; the former resulting from the greater scientific value and more moderate price of the new edition, and the latter from the indication which it furnishes of the speedy termination of the original work. We had formerly flattered ourselves that it was the intention of the authors to render it, as far as the present state of the science would admit, a complete gallery of Mammiferous Animals, and it was with this impression that we passed over without surprize the numerous figures which they have given of the commonest species, but which ought scarcely to have obtained admittance into such a work, if destined to include only a fraction of the class to which they belong. A work containing three hundred and sixty figures, taken from the living animals, accompanied by minute descriptions, and illustrated by valuable zoological observations, is certainly of the highest importance; but we cannot avoid feeling that its bulk, and, in the same proportion, its cost and the difficulty of its acquisition, has been greatly increased by the

needless repetition of figures of animals known to all the world and already represented in various publications with all the accuracy of which art is capable, as well as by the reiterated representations of others in several stages of their growth. It may be however that circumstances beyond the control of the authors have compelled them against their will to limit themselves to the comparatively small number of species to which their illustrations must now be confined; and if this be the case we can only express our regret that so grand an undertaking has been thus rendered imperfect, while we tender to them our best thanks for having executed even this portion of it in so superior a manner.

In addition to the advantages of a lower price and of a more portable form it is necessary to add that the quarto edition presents also those of a systematic arrangement, and of valuable general articles on the families and genera which are not to be met with in the original work.

---

ART. XIII. *Proceedings of Learned Societies on Subjects connected with Zoology.*

---

ZOOLOGICAL SOCIETY.

IN our last number we had the opportunity of congratulating our scientific readers on the approaching establishment of this Society: and we published a short Prospectus explanatory of its views. Since that period the Society has been completely organized; and its plans and objects are now before the public.

The first meeting for the formation of the Society took place at the House of the Horticultural Society on the 29th of April, 1826, when Sir T. Stamford Raffles was unanimously elected President of the Society, and a Council was appointed to assist him in the direction of its affairs. Committees were subsequently appointed for the planning out and superintendence of the several departments; and considerable progress was made in the preliminary arrangements of the Institution, when the sudden and lamented death of the President deprived the Society of its

founder and chief support. The different Committees however did not relax in their duties ; they continued to forward the plans which had been commenced under the superintendance of the President, and before the end of the year they had completed some of these plans, and had brought the rest to a state of considerable forwardness. A house was taken for the accommodation of the Society, situated at No. 33, Bruton Street ; and was fitted up for the exhibition of the different preserved collections of the Society. A plot of ground was also obtained from the Commissioners of Woods and Forests, &c. in the Regent's Park, for the exhibition of the living collection : it was fenced-in and drained, and prepared, as far as the season would permit, for plantations, walks, &c., with ponds, sheds, aviaries, and other suitable accomodations for the living animals.

A second meeting took place on the 7th of March, 1827, for the purpose of electing a President in the place of Sir T. Stamford Raffles, when the Marquis of Lansdown was unanimously chosen to that office. From the report of the Council, which was laid before the meeting, it appears that the Museum of the Society is now open to the Members. It consists of several thousand subjects in every branch of Zoology ; and it forms a well-arranged and instructive collection in almost every department of the science. This collection has been formed, with the exception of one or two trifling purchases, by voluntary contribution ; and every day it receives an increase from the zeal and liberality of the Members. It was also reported that the works in the Regent's Park are rapidly advancing : and it was expected that the gardens will be opened early in the ensuing summer.

The Council and Officers of the Society consist of the following noblemen and gentlemen :— Marquis of Lansdown, *President* : Duke of Somerset, V.P. : Earl of Darnley, V.P. : Earl of Egremont, V.P. : Viscount Gage : Lord Auckland, V.P. : Lord Stanley, V.P. : Sir E. Home : E. Barnard, Esq. : J. G. Children, Esq. : H. T. Colebrooke, Esq. : Rev. Dr. Goodenough : G. B. Greenough, Esq. : Major - General Hardwicke : Dr. Thomas Horsfield, *Vice-Secretary* : Rev. Dr. Raffles : Joseph Sabine, Esq. *Treasurer* : Charles Stokes, Esq. : N. A. Vigors, *Secretary* : C. B. Wall, Esq.



THE  
ZOOLOGICAL JOURNAL.

April—July, 1827.

---

ART. XIV. *A Description of some new Genera and Species of Petalocerous Coleoptera.* By the Rev. WM. KIRBY, A.M. F.R.S. F.L.S. &c.

HAVING received from North America since the publication of the Eighth Number of the Zoological Journal, a third and very distinct species of *Cremastocheilus*, I beg leave to offer, to the Editors of that Journal, as a continuation of my former paper, a description of it, together with one of some other undescribed *Petalocerous* beetles.

Subkingdom	ANNULOSA. M'L.
Class	INSECTA. L.
Subclass	MANDIBULATA. Clairv.
Order	COLEOPTERA. L.
Suborder	CHILOGNATHIMORPHITA (*). M'L.
Section	LAMELLICORNADA. Lat.
Subsection	PETALOCERENA. Dumer.
Tribe	THALEROPHAGIDA. M'L.
Stirps	{ ANTHOBIUNA. M'L. { XYLOPHILUNA. Latr.
Family	RUTELIDÆ. M'L.

\* I adopt this Suborder for reasons assigned elsewhere. (*Introd. to Ent.* iv. 92), where the above method of denominating groups is proposed.

## Genus. CNEMIDA.

*Nasus* trapezoideus, apice submarginatus subreflexus.

*Antennæ* novem-articulatæ: scapo (\*) breviusculo incrassato; articulis sequentibus quatuor subcylindricis brevissimis, sexto subpateræformi; capitulo triphyllo reliquam antennam longitudine æquantem.

*Mandibulæ* extus bidentatæ: dentibus obtusis.

*Palpi* articulo extimo subcylindrico, truncato.

*Scapularia* † inter elytra et prothoracem † intrusa, ut in *Cetoniâ* F.

*Prosternum* || triangulare, pone basin brachiorum § elevatum.

*Mesosternum* \*\* obtusum, inter pedes intermedios subporrectum, supra canaliculatum.

*Prothorax* subhexagonus, latitudine longior, utrinque subfoveatus, postice emarginatus.

*Scutellum* elongatum, triangulum isoscelem figurans.

*Elytra* humeris productis, rotundatis.

*Pedes*. *Tibiæ* femorum fere crassitudine: posterioribus quatuor maximis. *Cubitus* †† apice tridentatus. *Calcaria* 1, 2, 2. *Tarsi* subclavati: unguiculis inæqualibus, 2, 2, 2. In *manibus* †† unguiculus internus externo major est et apice bifidus: lobo interiori magno truncato; interiori minuto acuto; in *tarsis* autem quatuor posterioribus, unguiculus internus externo multoties minor.

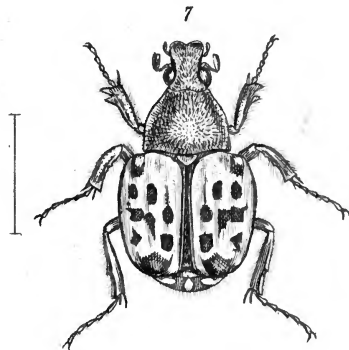
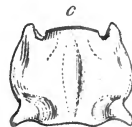
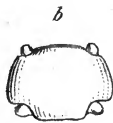
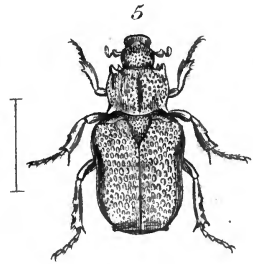
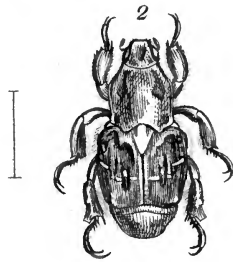
*Abdomen* segmentis duobus ultimis dorsalibus apertis: podice ||| magno, subtrapezoideo.

*Corpus* convexum.

Having only single specimens, I have not been able to examine the trophi of any species of this genus, but probably they are not very different from those of the other *Rutelidæ*; yet the mandibles are less prominent. With regard to external and secondary characters, *Cnemida* differs from the other insects of that family considerably. For instance, its front is distinguished by a long fovea

\* *Introd. to Ent.* iii. 366. B. † *Ibid.* 378. B. † *Ibid.* 368. 1. || *Ibid.* 369. B. § *Ibid.* 369. D. \*\* *Ibid.* 379. C. †† *Ibid.* 369. d. †† *Ibid.* 370. e. ||| *Ibid.* 390. 1.





or excavation between the eyes, to be found in none of them. Its thorax is considerably longer than wide, approaching to a hexagonal shape, and emarginate posteriorly; while in the other *Rutelidæ* it is wider than long, trapezoid,\* and in the majority not emarginate posteriorly. In *Macraspis*, however, *Chasmodia*, and a new genus, as yet undescribed, sent to me by the Rev. L. Guilding, the prothorax has a posterior obtuse sinus. These genera are all tending towards *Cnemida*, and even *Popillia* in some respects seems related to it. Again, in the genus we are considering, the scutellum represents an insosceles triangle, as it does likewise in the genera just named, but in the majority it is equilateral. All the tibiæ also are as large and sometimes larger than the thighs, whereas in the other *Rutelidæ*, even in *Chrysochlora*, where they are largest, the tibiæ are smaller than the thighs. The claws also, and the podex, are different, and the intervention of the scapulars between the prothorax and elytra, a character *Cnemida* exhibits in common with *Cetonia* F. is found in no other genus of the family as yet known. This genus appears to lead on one side of the circle from the *Rutelidæ* to the *Melitophili* Latr.

*Francilloni*. 1. *Cn. nigra, nitida*: prothorace utrinque subfoveato acucto †; lateribus piceis; elytris fasciâ pallidâ maculas duas nigras includente.

Plate V. Fig. 1.

Long. Corp. Lin. 4.

*Habitat* in Georgiâ Americæ Septentrionalis? Ex *Mus.* D. Francillon.

*Descr.* *Corpus* lanceolatô-ovatum, glabriusculum, nitidum. *Caput* triangulare, acuctum: vertice punctato, fronte foveato. *Antennæ* piceæ: scapo palpisque rufescentibus. *Prothorax* anticè segmento circuli dempto: lateribus in angulum obtusum medio prominentibus, dilutè piceis; confertim transverse acuctis præcipuè anticè, disco subpunctato. Foveæ duæ haud profundæ prothoracem signant. *Scutellum* basi et utrinque punctatum. *Elytra* lacunosa †, substriata, striis rugulosis, nigra: fasciâ latâ, subobli-

\* *Introd. to Ent.* iv. 264 n.27. † *Ibid.* 271 n. 21. † *Ibid.* 270. n. 16.

quâ, angulosâ, pallidâ, maculas duas irregulares nigras includente. *Pectus* albido pilosum. *Pedes* picei, supra acuducti: tibiis posticis intus barbatis. *Abdomen* segmento dorsali penultimo punctato acuducto.

*Sparshalli*. 2. *Cn.* nigra nitida: prothorace utrinque bifoveato; elytris fasciâ angulatâ, guttâque fulvis.

Plate V. Fig. 2.

Long. Corp. Lin.  $5\frac{1}{2}$ .

*Habitat* in Brasiliâ. Ex mus. D. Sparshall Norvicensis, Entomologi indefessi, cordati, benevoli.

*Descr.* Præcedenti simillima, sed major nigrior. *Prothorax* levissime punctulatus, utrinque foveis duabus, antico longiori profundiori, acuductis. *Elytra* fasciâ angustâ, obliquâ, angulari, introrsum maculari,\* guttâque humerali luteofulvis. *Podex* acuductus: dorso longitudinaliter lævi.

N.B. In aquâ calidâ immersa, ubi acuducta est hæc species, aureo splendore micat.

*Curtisii*. 3. *Cn.* nigro-picea: prothorace utrinque bifoveato: margine, elytrorum suturâ, femoribusque rufescentibus, illis annulo irregulari pallido.

Long. Corp. Lin. 6.

*Habitat* in Brasiliâ. In Mus. D. Curtis, *Entomologiæ Britannicæ*, operis eximii & utilissimi, auctoris.

*Descr.* Præcedenti similis sed major. *Prothorax* ut in illo bifoveatus sed lævis est: lateribus et foveis acuductis; margine laterali et postica piceorufis. *Scutellum* piceum. *Elytra* nigropicea, antice oblique lacunosa vel foveata: foveolis acuductis, basi substriata: striis subpunctatis, suturâ totâ margineque laterali antico vel humerali piceo rufis. Annulus obliquus angularis pallidus elytrorum basin signat. *Pedes* extra acuducti: femoribus quatuor posterioribus extrinsecus piceo-rufis: disco nigricante, tibiaram crassitudine, tibiis posticis vix barbatis. *Abdomen* podice acuducto ut in *Cn. Francilloni*. Segmento ventrali penultimo apice rufo.

\* *Introd. to Ent.* iv. 289. n. 39. b.

It is remarkable that in Mr. Curtis's specimen, the only one I have seen of the insect here described, the acuducted foveæ and parts of the head, prothorax, elytra, legs and podex, are partially covered with a white substance resembling fine flour and not at all granular; a circumstance opening the door to a probable conjecture as to the use of their peculiar sculpture, and proving that Creative Wisdom had an important end in view, when it scored these little beetles with seemingly insignificant scratches. When masons prepare the wall of a house for the outward coat of plaister, they draw lines upon it with their trowels, by means of which this coat adheres to the other. So the acuducted parts of the insects I am describing, in this respect differing from the other *Rutelidæ*, afford a surface properly prepared for the adhesion of the above matter.

From their agreeing together in their sculpture it is extremely probable that all the species of this genus of the New World collect some farinaceous substance, most likely from the plants that they frequent, for some purpose important to them in their peculiar economy. Were it granular I should at once pronounce it to be pollen, and as the hive-bee knows how to reduce the farina of flowers to an impalpable powder, before it forms it into the little masses of paste which it carries in its posterior tibiæ, so may the insects in question. Whether the farina thus collected is intended for the food of the insect itself, or its larvæ, can be determined only by actual observation; but, reasoning from analogy, the latter seems the most probable. I had occasion to observe however, \* with regard to another of the same family, that the molar part of its mandibles was filled with a similar substance, which makes for the former opinion. These circumstances tend to confirm Mr. W. S. MacLeay's hypothesis, that the *Rutelidæ*, though like the *Melolonthidæ*, &c. furnished with corneous mandibulæ and maxillæ, are anthobious, or derive their food from the blossom and not the foliage of the plants. † M. Latreille however arranges them with the *Dynastidæ*, &c., amongst his *Xylophili*, to which they certainly exhibit some affinity. †

\* *Linn. Trans.* XIV. 106. † *Trichius retusus* Fab. *Sys. Eleuth.* ii. 133. n. 16. and *Rutela lacerata* Germar *Insect. Spec. Nov.* 119. n. 204, appear to belong to this Genus. † *Familles Naturelles*, &c. 370. *Hor. Entomolog.* 72.

Stirps. MELITOPHILUNA. Latreille.

Family. TRICHIADÆ. Kirby. <sup>a</sup>

Genus. CREMASTOCHEILUS. Knoch. <sup>b</sup>

*Nasus magnus*, dilatatus, apice rotundatus reflexus, arcuatus. <sup>c</sup>

*Labrum* sub nasi arcu absconditum, subtriangulare, concavum. <sup>d</sup>

*Mandibula* intus cornea, tridentata? : dentibus acutis : extra lobo membranaceo paleæformi rotundato. <sup>e</sup>

*Maxilla* cornea : lobis unguiformibus ; interiori setis rigidis instructo. <sup>f</sup>

*Palpi maxillares* filiformes, quadriarticulati : articulo primo brevissimo, extimo elongato cylindrico. <sup>g</sup>

*Labium* magnum pelviforme : posticè sinu exciso. <sup>h</sup>

*Mentum* labii partis posterioris pagina inferior.

*Palpi labiales* triarticulati : articulis duobus primis brevissimis ; extimo longissimo cylindrico. <sup>i</sup>

*Antennæ* decemarticulatæ : scapo magno compresso subtrigono : secundo subgloboso ; tertio præcedente minori, sequentibus quatuor magnitudine gradatim crescentibus ; tribus ultimis lamellatis capitulum subovatum formantibus. <sup>k</sup>

*Oculi* hemisphærici : cantho basi carinato apice depresso. <sup>l</sup>

*Prothorax* subquadratus ; angulis in dentem prominentibus. <sup>m</sup>

*Prosternum* conicum ante brachia erectum, apice obliquè truncatum.

*Scutellum* triangulare acuminatum.

*Elytra* supra plana : lateribus deflexis ; humeris sublobatis.

*Pedes*. *Tibiæ* calcaribus 1, 2, 2. *Cubitus* apice bidentatus.

*Tarsi* filiformes : unguiculis æqualibus 2, 2, 2.

*Abdomen* ano utrinque tuberculo spiraculifero instructo. <sup>n</sup>

<sup>a</sup> Mr. W. S. MacLeay's great Family of *Cetoniadæ* constitutes, I think, a *Stirps* rather than a *Family*, and appears to contain at least *three* larger groups, each resolvable into various others—viz. *Trichiadæ*, *Cetoniadæ*, and *Gymnetidæ*. The first including *Trichius* F, *Cremastocheilus*, &c.; the second those *Cetoniadæ* without a lobed prothorax; and the third those in which that part is lobed, and covers the scutellum.—<sup>b</sup> As Knoch's *Neue Beyträge* is not a common book, I have given from him *in part* the characters of *Cremastocheilus*.

<sup>c</sup> Knoch *Neue Beytr.* t. iii. f. 2. aa.—<sup>d</sup> *Ibid.* f. 3.—<sup>e</sup> *Ibid.* f. 4. —<sup>f</sup> *Ibid.* f. 9. <sup>g</sup> *Ibid.* a. f. 5, 6. c.—<sup>h</sup> *Ibid.* f. 7. This author calls it *Catiniforme* (platter-shaped); but it resembles a basin, particularly a barber's basin. See also *Introd. to Ent.* iv. t. xxvi. f. 35.—<sup>i</sup> Knoch *Ibid.* f. 7. cc.—<sup>k</sup> *Ib.* f. 8. —<sup>l</sup> *Introd. to Ent.* iii, 365. n. 8. A.—<sup>m</sup> Plate Fig. abc.—<sup>n</sup> *Ibid.* d.



*Corpus depressum.*

M. Latreille appears to have hesitated much as to the natural station of this genus. At first he placed it at the head of his *Scarabéides* with membranaceous mandibles, immediately before *Trichius* \*. In his *Considerations*, &c. † it follows that genus. In the *Règne Animal* it closes the petalocerous genera †, and is succeeded by *Lucanus*. Again in the XXXth Volume of the *Nouveau Dictionnaire D'Histoire Naturelle*, published two years afterwards, it resumes its former station after *Trichius*; || and lastly, in his *Familles Naturelles Du Règne Animal*, it forms the second genus in his Family of *Melitophilii*, being preceded by *Platygenia*, which also is remarkable for a large concave *labium*, § and followed by *Goliathus*.\*\* It appears to form an osculant genus, as well as the preceding one. Its *Mandibulæ* corneous, with the exception of a dorsal lobe of membrane, and its corneous *Maxilla* armed with spines, prove that it is of that description, and its general habit and characters, that it is nearly related to the *Trichiadæ*, and that it connects M. Latreille's *Melitophilii* with some other family in another circle. *Cnemidu* indeed in some respects seems without the circle of *Rutelidæ*, and may be also regarded as osculant. If we look at the remarkably depressed body of *Cremus-tocheilus* and its quadrangular prothorax, we find an *analogy* between it and some of the *Scarabæidæ* M<sup>c</sup>L. particularly amongst the *Onitidæ*, where a remarkable genus from South America, named by Mr. MacLeay *Eutomus*, exhibits considerable resemblance at first sight to it. It has one character in common with the *Dynastidæ*, which is only to be met with in one other petalocerous genus, as far as my examination of them goes, the *prosternum* is nearly vertical, forming a kind of pectoral horn, before the base of the arms, or fore legs.

*Canaliculatus.* 3. *C. niger*, prothorace canaliculato : angulis posticis magis extantibus dentiformibus.

\* *Gen. Crust. et Ins.* ii. 121. † p. 198 + iii. 288. || Article *Scarabéides*, 302. This volume was published in 1819, and the third vol. of *Règne Animcl.* in 1817. § *Hor. Entomolog. t.* iii. f. 23. F. The part here called the *Labium* is the *Mentum* of Messrs. Latreille and MacLeay. See *Introd.* iii, 355. B. & 420—25. \*\* *Fam. Nat.* 371.

Plate V. Fig. 5. &amp; c.

Long. Corp. Lin. 6.

*Habitat* in Americâ Septentrionali, ex statu Massachussets dicto a D. Drake medico mihi benevolè transmissus.

*Desc.* Reliquis major. *Corpus* nigrum, vel piceo-nigrum, glabrum, subnitidum. *Caput* excavato-punctatum: punctis subconfluentibus. *Antennæ* articulis intermediis rufescentibus. *Labium* subrhomboidale, posticè profundè emarginatum. *Prothorax* (Plate V. Fig. 5. c). subquadratus, variolosus, lacunosus, medio obsolete sed latius canaliculatus; angulis posticis extantibus denticuliformibus, triangularibus, acutis; anticis obtusioribus intus foveâ adjacente, posticè item foveæ duæ majusculæ, oblongæ notandæ. *Elytra* subrugosa, lacunosa, variolosa. *Abdomen* segmento dorsali penultimo utrinque tuberculo apice spiraculifero (Plate V. Fig. d.), quod etiam in reliquis speciebus obtinet sed minus conspicue.

This species is larger than either of those described in the eighth number of the Journal, and is sufficiently distinguished from them by its channelled prothorax with very prominent angles. The species which I then described as the original *C. Castaneæ*\* of Knoch, and which was sent me under that name from America, upon a comparison with his description and figure, which I have since had an opportunity of consulting, I find to be quite a distinct species. I propose therefore calling it *C. Harrisii*, from Dr. T. Harris, who sent it me. Knoch says of his insect, "*Thorax prope basin latissimus*," whereas in *C. Harrisii* the prothorax is square (Plate V. Fig. 3. a.); in *C. Castaneæ* also the labium is wider than long, but in the former it is nearly round. In his the prothorax is covered with puncta, but in mine it is partly levigated. The sculpture of the elytra also differs. *C. Castaneæ* approaches much nearer to that which I have called *C. variolosus*, (Plate V. Fig. 4) but it is larger, the prothorax is wider posteriorly, and the notch of the labium is not near so deep. We have therefore already four species of this remarkable genus, which appears to belong exclusively to North America: at least nothing similar seems to have been found in the vast collections of S° American insects that have been sent to this country.

\* Plate V. Fig. 3.

## Genus. CYMOPHORUS.

*Nasus* apice rotundatus, reflexus.

*Antennæ* decemarticulatæ: scapo incrassato trigono; pedicello articulo sequenti æquali; \* articulis intermediis brevissimis cylindricis; capitulo longo admodum, triphylo.

*Palpi* articulo extimo oblongo obtuso.

*Labrum* sub rhinario penitus absconditum.

*Labium* subquadratum, verticale.

*Mentum* pone labium latitans horizontale.

*Oculi* hemisphærici: cantho carinato.

*Prothorax* subquadratus, anticè angustatus: lateribus obtusangulis.

*Scutellum* triangulare, æquilaterale.

*Mesosternum* anticè truncatum verticale, supra canaliculatum.

*Elytra* lacunosa, longitudinaliter elevata, utrinque sinuata: humeris fere lobatis, ut in quibusdam *Gymnetidis* & *Cetoniadis*. †

*Pedes*. *Tibiæ* calcaribus 1, 2, 2. *Cubitus* edentulus.

*Unguiculi* simplices, æquales, breves, 2, 2, 2.

*Abdomen* ano tricorni: cornubus lateralibus basi intus spiraculiferis.

*Corpus* subdepressum squamulosum.

This remarkable genus appears nearly related to the preceding, and makes an approach, in some respects, to those *Gymnetidæ* whose elytra are lobed at the shoulders, yet the prothorax is not porrected behind, so as to cover the scutellum; it however most resembles those *Cetoniadæ* that are remarkable for their lobed shoulders, and have an uncovered scutellum, such as *C. Histrio*, *versicolor*, *variegata*, &c. but it wants the prominent character of *Cetoniadæ*, the scapular forming a fulcrum between the elytra and prothorax: its place is probably between *Cremastocheilus* and *Genuchus* †, which last exhibits the above character, and is more nearly related to the *Cetoniadæ*.

*Undatus*. C.

\* *Introd. to Ent.* iii. 366. C. † I allude to a genus of that family which contains *Cetonia marmorea*, & *Graculus*, *Lanius*, &c. F, which in my cabinet is named *Marmarina*, and likewise to one containing *Cetonia Histrio*, *Æquinoctialis*, F. &c. which I call *Polybaphes*. † *Linn. Trans.* xiv. 569.

Plate V. Fig. 6.

Long. Corp. Lin.  $3\frac{1}{2}$ .*Habitat* in Americâ Septentrionali? Ex *Mus.* D. Francillon.*Desc.* *Corpus* oblongum, piceum, nitidum, albido squamulosum, subtus confertius. *Caput* suborbiculatum punctatum. *Prothorax* confertissimè granulatus\* scaber.*Elytra* lacunosa punctulatissima: disco longitudinaliter in carinam obtusam undatam elevato, apud suturam depressa bistrigata: striis lævibus. *Tibiæ* extrinsecus striatulae. *Abdomen* podice medio elevato in cornu breve longitudinale triangulare acutum, segmento ventrali penultimo, utrinque cornu acuto, introrsum basi spiraculifero, armato.

## Genus. CAMPULIPUS.

*Nasus* subtrapezoideus, utrinque et antice marginatus: margine reflexo, medio concavus.*Antennæ* capite fere longiores decem-articulatae: scapo incrassato elevato, arcuato; articulis intermediis in dentem extra prominentibus; capitulo trilamellato elongato: lamellâ inferiori pubescente.*Prothorax* subhexagonus, vel lateribus in angulum obtusum prominentibus.*Prosternum* elevatum, compressum, hirsutum, apice submarginatum.*Pedes.* *Cubitus* apice tridentatus. *Tibiæ* intermediae in angulum obtusum incurvatae et quasi fractae.*Coleoptra* subpruinosa disco plana, lateribus declivia, longiora quam in reliquis *Trichiadis*, & partem podicis operientia.*Corpus* subdepressum: trunco subtus hirsuto.Type of the genus *Melolontha limbata* Oliv. *Trichius limbatus* De Jean.This genus, though evidently one of the *Trichiadae*, recedes from *Trichius* so much in habit, especially in its depressed body, long elytra, remarkable intermediate tibiae, and nasus truncated and narrowest at its apex, that I have no hesitation in separating it. It is said by the Baron De Jean, in his catalogue, to be a native of the East Indies.\* *Introd. to Entomlog.* iv. 273. n. 47—9.

## Genus. ACANTHURUS.

*Nasus* immarginatus, utrinque obtusangulus, apice rotundatus.

*Antennæ* capite breviores, decemarticulatæ: scapo brevi subtriangolo hirta; pedicello brevissimo; articulo tertio turbinato, sequentibus tribus brevissimis pateriformibus; sexto majori subturbinato; septimo brevissimo; ultimis tribus capitulum majusculum crassiusculum oblongum formantibus.

*Palpi* articulò extimo elongato, lineari-lanceolato, tereti, apice truncato, haud foveato.

*Prothorax* longior quam in reliquis *Trichiadis*, trapezoideus, anticè disco bicarinatus: lateribus denticulatis.

*Coleoptra* disco plano-concava, lateribus declivia, admodum abbreviata.

*Abdomen* segmento penultimo toto et podice apertis, anus in altero sexu stylo elongato instructus, sive podice styliformi.

*Corpus* depressum, supra reticulato-acuctum, subtus squamulis canaliculatis tectum.

Type of the genus *Trichius hemipterus* F.

This genus, of which I have seen a second species amongst Dr. Horsfield's Javanese insects, is sufficiently distinguished from *Trichius*, not only by its depressed form, but also by its long trapezoidal prothorax, its short elytra, many-toothed cubitus, and the micro that arms the anus of the male.

## Genus. TRICHIUS.

*Bigsbii*. *T. niger* fulvescente-hirtus: elytris luteis; maculis novem nigris.

Plate V. Fig. 7.

Long. Corp. Lin. 7.

*Habitat* in Canadâ prope Lacum St. Clair a D. Bigsby, M.D. lectus, cujus nomine merito condecoratur.

*Descr.* Habitus ferè *T. fasciati*, sed major & minus hirtus. *Corpus* ovatum, nigrum, fulvescente-hirtum. *Caput* quadratum: naso reflexo, emarginato. *Antennæ* cum palpis lutæ apice nigræ. *Prothorax* trapezoideus, antice angustior, lateribus rotundatis: posticè repandus. *Scutellum* breve, apice rotundatum. *Elytra*

glabra, subpruinosa, lutea : maculis novem nigris, nempe 1 humerali magno, 2, 3, 2 transversè ordinatis, intermediis duabus lateralibus irregularibus confluentibus minoribus, et 1 apicali reliquis majori. Maculæ tres farinoso-fulvæ ; intermedio oblongo, lateralibus obliquis sinuatis, podicem signant.

I may perhaps render some little service to the Entomologist, if, as a conclusion to this paper, I endeavour to point out the natural groups into which the true genus *Trichius*, according to my idea of it, and as far as my own collection will enable me, may be resolved.

Fabricius, in his *Systema Entomologiæ* and *Species Insectorum*, took for the type of his new genus *Trichius*, which he so named, I suppose, on account of its hairy body, *Scarabæus fasciatus* of Linné : but in his later works he seems to have considered *T. Eremita* as his type, which being nearly a naked insect, does not so well correspond with the name. I shall consider the former as the true type of the genus, which as far as my own collection leads, I find to consist of seven subgenera as follows :

### Genus. *Trichius* F.

#### Subgenera.

- \* *Legitimi*. Hirsuti : elytris nudis pruinosis ; cubito bidentato ; podice farinoso-maculato ; palpis articulo extimo subincrassato supra foveato. Ex. *Trichius fasciatus*, *succinctus*, *Bigsbii*, &c.
- \*\* *Trichini*. Hirsuti : elytris nitidis ; lineolis maculisve farinosis ; podice farinoso-maculato ; *Palpis* articulo extimo tenuiori supra foveato. Ex. *Trichius viridulus*, *piger*, and some others from North America.
- \*\*\* *Tetrophthalmi*. Hirsuti : elytris nitidis, immaculatis ; cantho oculum ferè dividente ; cubito tridentato ; calcaribus tibiarum posticarum elongatis obtusis ; podice immaculato ; palpis articulo extimo foveato. Ex. *Trichius sutularis* K.M.S. An undescribed species from Java.
- \*\*\*\* *Archimedi*. Subtus densè squamulosi, supra pruinosi : podice item squamuloso ; prothorace triangulo æquilate-

rali signato: femoribus posticis incrassatis arcuatis; tarsis posticis longissimis: palpis maxillaribus elongatis articulo extimo haud foveato. Ex. *Trichius Delta*.

\*\*\*\*\* *Euclidii*. Sparsim squamulosi: podice utrinque, capite, femoribus extra, prothorace anticè, ac ductis; hoc triangulo æquilaterali impresso, cubito tridentato: palpis articulo extimo haud foveato. Ex. *Trichius Triangulum*. \*

\*\*\*\*\* *Aleurosticti*. Subtus hirti: elytris nitidis, abdominis lateribus, elytris et podice emarginato farinoso-guttatis; prothorace canaliculato. Palpis articulo extimo subfoveato. Ex. *Trichius nobilis, octopunctatus, &c.*

\*\*\*\*\* *Gymnodi*. Fere nudi, immaculati: naso apice rotundato vel truncato; scutello triangulum isoscelem figurante: antepectore transversè plicato: palpis articulo extimo supra excavato, oblongo, compresso. Ex. *Trichius Eremita* and others undescribed from North America.

Instead of giving the denominations of the subgenera a feminine termination as proposed in the Introduction to Entomology, I have followed the gender of the genus, which appears to me best. Should any of these, upon further examination, appear more than subgenera, it will be easy to alter the name to the singular.

Mr. W. S. MacLeay has observed with regard to *Trichius fasciatus*, how much in its general appearance and mode of flight it resembles a wasp or some hymenopterous insect. † This observation may be extended to several other beetles, especially to many of Latreille's *Anthobii*; some species of *Amphicoma* and *Anisonyx* so closely resembling humble-bees as to be scarcely distinguishable from them, another proof of those remarkable analogies where there is no affinity, that meet us wherever we turn to observe natural objects. As the hairy *Hymenoptera* are useful in fertilizing flowers, by transporting upon their hirsuties, far and wide, the farina fecundans, so these beetles probably answer the same useful purpose, as has been well remarked by the learned author just named. † Some of these flower-frequenting *Petalocera*

\* *Linn. Trans.* xii. 408. n. 46. *Introd. to Ento.* iii. 368. D. 2. † *Horæ Entomolog.* 78. † *Ibid.* 77.

bear the aspect of insects of other orders, and I have a genus, which I call *Arachnimorpha*, and to which *Anisonyx cinerea* and some others belong, that even resemble *spiders*.

N.B. In plate V. figures 3. 4. 5. are given uncoloured, because their sculpture is thus best shewn, and as they are black, or nearly so, the colouring is of no great consequence.

---

ART. XV. *On several Groups and Forms in Ornithology, not hitherto defined.* By WILLIAM SWAINSON, Esq. F.R.S., F.L.S., &c.

NOTWITHSTANDING the progress which systematic Ornithology has made within the last few years, and the signal benefit which has resulted from the labours of those who have turned their attention to natural groups, there still remains much to be done, before our knowledge of this department of science can be brought to an equality with that which we possess of others. There are, indeed, few striking groups which have escaped the attention of the great reformers of the day; but there are numerous others, which, either from the seemingly trivial nature of their characters, or from the supposed impossibility of detaching them from approximating forms, still remain nearly in the same state in which they were left by the writers of the last century.

The necessity of a total revision of these genera, and their separation into minor groups, is daily becoming more apparent. In pointing out affinities or analogies, we are perpetually obliged to refer to groups "not yet characterized," to explain our meaning, but which, from being undefined, become in fact, no reference at all. Meanwhile new species are pouring in upon us from all parts of the world, which from the same cause are arranged under the old genera, and increase their original confusion.

To lessen this evil so far as lies in my power, I have long been engaged in revising the characters of all the known groups, and in



defining those which have been neglected. This, from necessity, will be a work of time; and unless my observations are brought before the scientific world at an early period, there is great probability of their being anticipated, and of a consequent confusion of nomenclature.\*

The principal number of the forms described in the following pages, are not only distinguished by external characters, but by a peculiarity in their geographic distribution; two circumstances which are generally supposed to be the most characteristic of natural groups. The materials have been furnished from three sources. 1. The Ornithological discoveries of Mr. Bullock, and subsequent travellers, in the Cordelleras of Mexico. 2d. A valuable collection of birds, recently transmitted for my examination by Dr. Langsdorff, who is now traversing the vast inland province of Matto Grosso, in the heart of Brazil: and thirdly, from my own collections, made in that empire some years ago. The discoveries of the two first travellers I am now preparing to describe in detail. A few other forms belonging to Africa and India are likewise included, and I should have added to these several others, which I have long ago investigated, peculiar to New Holland, did I not conclude that they will be found in the catalogue of the birds of that country, in the museum of the Linnean Society, about to be laid before the public by Dr. Horsfield and Mr. Vigers. Experience, indeed, daily shews, that where so much is to be done, a division of labour is not only most advantageous to science, but also more agreeable to the views and feelings of those who are engaged in its pursuit. It frequently happens that the same object will appear in different lights, and suggest opposite conclusions to different persons. They may agree on facts, but differ in their inferences. Nature is always the same, but how various are the readings of her commentators! So true it is, that in our efforts to interpret her laws, we must fre-

\* The Ornithologist need not be told how desirable it is to prevent that perplexity being increased, which has resulted from the different systems of Illiger, Vieillot, Cuvier, and Temminck, following each other in rapid succession.

quently alter, modify, and abandon our first opinions, before we can hope to reach even an approximation to truth.

I have noticed but few of the forms among the *Muscicapidæ*, *Fringillidæ*, and *Nectariniadæ*,\* as I intend to investigate the affinities of these groups in detail, upon a future occasion. My materials for a history of the *Trochilidæ* are more perfect, and I have therefore characterized the five principal groups, under which all the known species will arrange themselves. And I take this opportunity of again soliciting from naturalists, really anxious to forward science, any information regarding these birds, which they may have it in their power to give me.

In these days, when the necessity of forming new divisions to receive new forms, is so universally admitted, it appears hardly necessary to offer any apology on this head; but as some few of them now proposed, rest upon characters generally considered as of a secondary nature, I wish it to be remembered that they equally depend on their geographic distribution. And I must here express my belief, that it is only upon these principles of arrangement that we can ever hope to reduce the vast genera, *Sylvia*, *Muscicapa*, *Myiothera*, *Merula*, *Fringilla*, and *Columba*, of modern authors, to any thing approaching a natural, or even an intelligible arrangement.

It is, indeed, owing to the little comparative attention that has been paid to the characters and physical distribution of Birds in general, that I have found it essential to characterize so many forms. And while I here express my intention of increasing this number hereafter, whenever a geographic group exhibits external characters by which it may be recognized, (however trivial they may appear), I only act upon a principle which the most profound writers on Botany have recognized, and the correctness of which, as applied to Zoology, is daily becoming more apparent. That it is subject to occasional exceptions, no one can deny, any more than that between two conterminous groups, there will be a point of connection where no one can say to which group a particular individual belongs.

\* The genus *Nectarinia* of Illiger, corresponding to the Families of *Nectariniadæ* and *Cinnyridæ* of Mr. Vigors. See Linn. Trans. vol. i. p. 463, and Zool. Journal, vol. ii. p. 401.

Again; so far from a multiplicity of genera creating confusion to the student, there requires but little argument to prove, that when such genera are founded on geographic distribution, the very reverse of this is the case. Let any one take, for instance, a *Sylvia*, the name of which he wishes to ascertain; as the genus now stands, he will probably have to compare it with 300 separate descriptions, or, in other words, he will have 300 points of reference. We will suppose that the bird inhabits America; the length of the first quill feather immediately betrays its native country, and by the acuteness and slight emargination of the bill he immediately refers it to the genus *Sylvicola*. I have instanced a large group, but even here, instead of reading the characters of three hundred species, the labour would be diminished to that of reading twenty-five or thirty.

It may excite the surprise of some, and the objections of others, that the number of new divisions here characterized amount to sixty-four; and that eleven of these contain, at present, only a single species. Yet this astonishment will soon cease on looking further into the matter. The number of species which these genera will comprise, may be estimated, upon a moderate calculation, at 517: so that there would actually be an average of more than eight to each genus. But this is not all; for in this estimate I allude only to described or known species. What the proportion may be, when the discoveries of the next ten years are added, it is impossible to guess. Yet this we *do* know, that when the genus *Psaris* was founded, there was but one example,—now there are eight.\* *Thamnophilus*, in like manner, contained but four or five,—now we know of near twenty-five. While that of *Urotomus*, proposed but two years ago from a single bird, has now been augmented by three other species. With these striking examples before us, we question whether any naturalist will be hardy enough to revive the old complaint about “making every

\* In this number I include three unpublished species, which will soon be illustrated by Sir William Jardine, Bart. and Mr. Selby. I have now to add another, just received by me from Mexico, which has afforded me great pleasure, inasmuch as it may probably increase the interest of the forthcoming monograph of this group, preparing by these zealous Ornithologists.

species a genus." So far, indeed, is this from truth, that we require many more, before even the descriptions of those species already in our systems, can be rendered intelligible to modern science.

Warwick, 15th Nov. 1826.

ORDER. INSESSORES. *Vigors.*

*Family Laniadæ.*

*Sub-family Laniana.*

CYCLORHIS.

*Mandibulá superiore leviter dentatá, subobtusá, naribus rotundatis.*

*Alæ breves, convexæ, rotundatæ, remigibus 4<sup>tâ</sup>, 5<sup>tâ</sup>, et 6<sup>tâ</sup>, æqualibus, longissimis.*

*Cauda æqualis.*

*Pedes robusti.*

Upper mandible slightly toothed, and rather obtuse. *Wings* short, convex, rounded; the fourth, fifth, and sixth quills longest, and of equal length. *Tail* even. *Feet* robust.

Type. *Tanagra Guianensis.* Auct. Tropical America.

NILAÜS.

*Rostrum mediocre, subgracile, culmine arcuato, mandibulá superiore fortiter dentatá; naribus ovalibus.*

*Alæ subattenuatæ; remigibus 3<sup>tiâ</sup>, 4<sup>tâ</sup>, et 5<sup>tâ</sup> ferè æqualibus, longissimis.*

*Cauda brevis, æqualis.*

*Pedes graciles; unguibus acutis.*

*Bill* moderate, somewhat slender; culmen gradually hooked; upper mandible strongly toothed; nostrils oval. *Wings* rather

pointed, the third, fourth, and fifth longest, and of equal length.

*Tail* short, even. *Feet* slender; claws acute.

Type. *Lanius capensis*. Shaw.

The unusual slenderness, and consequent weakness of the bill, indicates this to be an aberrant form, leading to the next sub-family. So far as I can judge from figures, there appear two or three other African Laniadæ which seem closely allied to this type.

*Sub-family* *Thamnophilina*.

MALACONOTUS.

*Mandibulâ inferiore emarginatâ, rictu barbato.*

*Alæ breves.*

*Cauda mediocris, æqualis, vel subrotundata.*

*Pedes subfortes; tarsorum squamis lateralibus integris.*

Inferior *mandible* notched, rictus with stiff bristles. *Wings* short.

*Tail* moderate, even, or slightly rounded. *Feet* rather strong, lateral scales of the tarsi undivided.

Type. *La Pie-grieche blanchot*. Le Vaill. Ois. d'Af. pl. 185.

*Sub-family* *Dicrurina*.

BRACHYPUS.

*Rostrum breve, compressum, emarginatum, culmine arcuato, elevato; gonyde recto; rictu setis rigidis barbato; setis nuchalibus obsoletis.*

*Alæ mediocres, remigibus 4<sup>tâ</sup> et 5<sup>tâ</sup>, æqualibus, longissimis.*

*Pedes subfortes, brevissimi; tarsorum squamis integris.*

*Cauda mediocris, rotundata.*

*Bill* short, compressed, notched; culmen elevated, curved; gonyes straight. Rictus defended with short bristles. Nuchal bristles obsolete. *Wings* rounded; the fourth and fifth quills equal and longest. *Tail* moderate, rounded. *Feet* strong, very short; the scales entire.

Types. *Le Curouge*. Levaill. Ois. d'Af. pl. 107. f. 1.  
*Turdus Atriceps*. Pl. Col. 147.

It is only from the unusual shortness of the feet, indicative of these birds feeding upon the wing, that I here associate them among the aberrant forms of the sub-family *Dicrurina*. There are many species, all of which appear excluded both from the new world and Australia.

In a natural series they will immediately follow the genus *Trichophorus*.

*Sub-family Campephagina?*

PTILIOGONATUS.

*Rostrum breve, depressum, subtriangulare, culmine elevato, sub-  
arcuato; tomis rectis. Naribus subnudis; aperturá setis  
debilibus paucis instructá.*

*Alæ mediocres, rotundatæ, remigibus 4<sup>tá</sup> et 5<sup>tá</sup> ferè æqualibus,  
longissimis.*

*Cauda subelongata, in medio subfurcata, rectricibus lateralibus  
-rotundatis.*

*Pedes brevissimi, genibus plumatis, unguibus parvis, acutis.*

*Bill* short, depressed, somewhat triangular; culmen elevated, slightly curved; commissure straight. *Nostrils* naked, the aperture furnished with a few weak bristles. *Wings* moderate, rounded; the fourth and fifth quill longest. *Tail* rather lengthened, the sides rounded, the middle slightly forked. *Feet* very short, knees feathered, claws small acute.

Type. *P. cinereus*. Sw. Mex. Zool.

*P. cinereus; mento rectricumque lateralium medio albis; caudæ  
tegminibus inferioribus flavis; alis caudâque nitidè nigris.  
Mas?*

This is one of the most remarkable birds among those which have been recently discovered in the interior of Mexico. It ex-

hibits an osculant form between the present *Campephagæ*, and the aberrant forms of the subfamily *Tyrannina*. Three species, all undescribed, are in my possession.

### PITANGUS.

*Rostrum magnum.*

*Alæ mediocres, remigum pogoniis internis immarginatis, apice obtusis.*

*Cauda æqualis.*

*Pedes subbreves, fortes.*

*Bill* large. *Wings* moderate, the quills entire, and their extremities obtuse. *Tail* even. *Feet* rather short, robust.

Type. *Tyrannus sulphuratus*. Vieill. Ois. de L'Am. pl. 47.

### TYRANNUS.

*Rostrum subbreve, forte, depressum.*

*Alæ elongatæ, remigum pogoniis internis abruptè emarginatis.*

*Cauda mediocris, ferè æqualis.*

*Pedes breves.*

*Bill* rather short, strong, depressed. *Wings* lengthened; the quills internally abruptly emarginate. *Tail* moderate, even, or slightly forked.

Type. *Tyrannus intrepidus*. Vieillot—Wilson, 2. pl. 13. f. 1.

### Sub-family Tyrannina.

### MILVULUS.

*Rostrum breve; culmine depresso, recto.*

*Alæ elongatæ, remigum pogoniis internis ad apicem emarginatis, vel attenuatis.*

*Cauda longissima, furcata.*

*Pedes breves.*

*Bill* short; culmen depressed, straight. *Wings* lengthened, the primary quills either attenuated, or notched near their extremities. *Tail* long, forked. *Feet* short.

Type. *Tyrannus Savana*. Vieill. Ois. de L'Am. pl. 43.

I have elsewhere\* endeavoured to point out the natural groups into which the genus *Tyrannus* of M. Vieillot appears to be divided. It remains therefore only to distinguish these groups by names; between each of their respective types, there exists a striking difference, but these peculiarities (as in all natural groups where the chain of connection is nearly perfect) become so diminished in the series of species, that no line of demarcation can be drawn between them.

### NENGETUS.

*Rostrum mediocre, compressum.*

*Alæ subbreves, remigum pogoniis internis attenuatis.*

*Pedes elongati, robusti.*

*Bill* moderate, the sides compressed. *Wings* rather short, the quills attenuated. *Legs* lengthened, strong.

Type. *T. Nengeta*. Sw. Monog.

*Family Merulidæ.*

*Sub-family Myiotherina.*

### UROTOMUS.

*Rostrum ut in genere Dryophilá.*

*Alæ brevissimæ.*

*Cauda brevissima, fere inconspicua.*

*Pedes graciles, longi; tarsorum squamis lateralibus plerumque integris.*

*Bill* as in *Dryophila*. *Wings* very short. *Tail* very short, scarcely seen. *Feet* long, slender, lateral scales of the tarsi generally entire.

\* Journal of Arts, &c., edited at the Royal Institution, No. 40, Jan. 1826.



Sub-family Merulina.

ORPHEUS.

*Rostrum mediocre, forte, compressum.*

*Alæ breves, rotundatæ; remige 1<sup>mâ</sup> brevissimâ, 2<sup>dâ</sup> et 3<sup>tiâ</sup> gradatis, 4<sup>tâ</sup>, 5<sup>tâ</sup> et 6<sup>tâ</sup> ferè æqualibus, longissimis.*

*Cauda elongata, rotundata, vel gradata.*

*Pedes validi.*

*Bill* moderate, strong, compressed. *Wings* short, rounded: the first quill short, two and three graduated, four and five nearly equal and longest. *Tail* lengthened; rounded, or graduated.

*Legs* strong.

Type. *Turdus polyglottus*. Wilson, 2. pl. 10. fig. 1.

The definitions of this group are only applicable to the species found in the New World. Those inhabiting Africa and India, are distinguished by characters peculiar to themselves.

Family Sylviadæ.

TRICHAS.

*Rostrum gracile, subacutum, integrum.*

*Alæ breves, rotundatæ; remigibus, 1<sup>mâ</sup> et 7<sup>mâ</sup> æqualibus, 3<sup>tiâ</sup>, 4<sup>tâ</sup> et 5<sup>tâ</sup> ferè æqualibus, longissimis.*

*Cauda lata, rotundata.*

*Pedes fortiusculi, elongati.*

*Bill* slender, acute, entire. *Wings* short, rounded, the first and seventh equal, the third, fourth, and fifth, nearly equal, and longest. *Tail* broad, rounded. *Legs* lengthened, robust.

Type. *Sylvia Trichas*. Wilson 1. pl. 6. f. 1.

(*Trichas personatus*. Sw.)

This form is intimately connected with *Synallaxis*, and two or three other groups, peculiar to Africa and Australia. Feebleness

of flight, and strength of foot, separate these birds from the typical genera; while the strength and curvature of the hind claw forbids us to associate them with the true *Motacillæ*.

### SYNALLAXIS. (Vieill.)

*Rostrum mediocre, fortiusculum, compressum, subintegrum; culmine leviter arcuato: rictu imberbi.*

*Alæ brevissimæ, rotundatæ; remigibus 1<sup>má</sup>, 2<sup>dá</sup>, et 3<sup>tiá</sup> gradatis, 4<sup>tá</sup>, 5<sup>tá</sup> et 6<sup>tá</sup> ferè æqualibus, longissimis.*

*Pedes subfortes; tarsorum squamis lateralibus frequentibus.*

*Cauda elongata, gradata vel cuneata.*

*Bill* moderate, rather strong, compressed, nearly entire, culmen slightly curved; mouth without bristles. *Wings* very short, rounded; the first, second, and third quill graduated, the fourth, fifth, and sixth nearly equal, and longest. *Tail* broad, graduated, or cuneated. *Feet* rather strong; the lateral scales of the tarsi numerous.

Type. *Synallaxis rutilans*. Temminck, Pl. col. 227, f. 1.

The characters of this genus are here introduced, that they may be brought more immediately into comparison with the next. To this group the *Malurus garrulus* (Zool. Ill. pl. 138.) will undoubtedly belong. All the species are from tropical America.

### DRYMOICA.

*Rostrum gracile, acutum, immarginatum; culmine arcuato.*

*Alæ breviusculæ, rotundatæ; remige 1<sup>má</sup> brevissimá; 2<sup>dá</sup> et 3<sup>tiá</sup> gradatis; 4<sup>tá</sup>, 5<sup>tá</sup> et 6<sup>tá</sup> æqualibus, longissimis.*

*Cauda elongata, gradata.*

*Pedes longiusculi, tarsorum squamis anterioribus 5 inæqualibus, lateralibus integris.*

*Bill* slender, acute, entire; culmen arched. *Wings* rather short, rounded; the first quill shortest, the second and third graduated, the fourth, fifth, and sixth equal, and longest. *Tail*

lengthened, and graduated. *Feet* rather long; anterior scales of the tarsi five, unequal; lateral scales entire.

Types. *Le Capolier*. Le Vaill. Ois. d'Afr. pl. 130, f. 1. ←

*La queue gazeé*. Id. f. 2.

The *Rousse tête* (pl. 124) and the *Pinc-pinc* (pl. 131), of the same author, appear to be aberrant species of this group, which is numerous in Africa, and may probably extend to India. It meets the Australian group of *Malurus*; from which, however, it is easily known by the gradual curve of the culmen—by the upper mandible not being notched—by the anterior scales being divided instead of entire; and by the nostrils being destitute of feathers. From *Dasyornis* it is separated by the great difference in the strength of the bill; strong in one and feeble in the other; as well as by the construction of the wings.

*Sub-family Silviana.*

SYLVICOLA.

*Rostrum gracile, acutum, leviter emarginatum.*

*Alæ longiusculæ, attenuatæ; remige primâ secundâ vix breviorè, secundâ et tertiâ longissimis.*

*Cauda mediocris, æqualis.*

*Pedes mediocres; tarsorum squamis anterioribus 4 inequalibus, lateralibus integris.*

*Bill* slender, acute, slightly notched. *Wings* rather long, pointed, the first quill scarcely shorter than the second and third, which are the longest. *Tail* moderate, even. *Legs* slender, anterior scales four, unequal; lateral scale entire.

Type. *Sylvia pusilla*. Wilson, 4. pl. 28. f. 3.

This genus, which will comprise exclusively the greatest part of the *Sylvia* of North America, is strictly typical. The formation of the wing affords an unerring mark of distinction. The nearest approach I have yet seen towards this extensive group is

170 Mr. Swainson on several new groups in Ornithology.

made by another, which has just been characterized by Mr. Vigors and Dr. Horsfield, under the name of *Zosterops*. It is found both in Africa, India, and Australia.

VERMIVORA. *Wilson.*

*Rostrum gracile, conicum, acutum, integrum.*

*Alæ longiusculæ, attenuatæ, remigibus 1<sup>mâ</sup> et 2<sup>dâ</sup> sub-æqualibus.*

*Cauda æqualis.*

*Pedes pallidi.*

*Bill* slender, conic, acute, entire. *Wings* rather long, pointed, the first and second quill nearly equal. *Tail* even. *Feet* pale.

*Type.* *Sylvia vermivora.* Wilson, 3. pl. 24, f. 4.

The habits of this group have been minutely described by Wilson, I have therefore merely defined the external characters from the type he has proposed.

HYLIOTA.

*Rostrum longiusculum, compressum; culmine leviter arcuato; gonyde subascendente; naribus membranaceis, nudis, aperturâ oblongâ.*

*Alæ mediocres, subattenuatæ; remige 1<sup>mâ</sup> brevissimâ, vel spurîâ, 2<sup>dâ</sup> et 7<sup>mâ</sup> æqualibus, 3<sup>tiâ</sup>, 4<sup>tâ</sup> et 5<sup>tâ</sup> fere æqualibus, longissimis.*

*Cauda lata, breviuscula, æqualis.*

*Bill* rather lengthened, compressed; culmen slightly arched, gonyes somewhat ascending; nostrils membranaceous, naked, the aperture oblong. *Wings* moderate, rather pointed; the first quill very short, or spurious, second and seventh equal, third, fourth and fifth nearly equal, and longest. *Tail* broad, rather short, and equal.

I cannot, with any certainty, cite a published species as typical of this genus. Yet, from the construction of the wing, I have no doubt that it belongs either to Africa or India.

SEIÜRUS.

*Rostrum breve, compressum, rectum, emarginatum; gonyde sub-ascendente.*

*Alæ longiusculæ, remigibus 1<sup>mâ</sup> et 3<sup>tiâ</sup> æqualibus, 2<sup>dâ</sup> longissimâ.*

*Cauda æqualis.*

*Pedes mediocres, pallidi, tarsorum squamis ferè integris.*

*Bill short, compressed, pointed, emarginate, gonyx sub ascending.*

*Wings rather long, the first and third quill equal, the second longest. Tail even. Feet pale, the scales nearly entire.*

*Type. Turdus aurocapilla. Wilson, 2. pl. 14, f. 2.*

The economy of this bird, notwithstanding its general similitude in plumage to the *Merulidæ*, is much more in unison with the *Sylviadæ*. Its manners, circumstantially described by Wilson, will place it between the *Sylviana* and *Motacillina*. There are several other species, mixed among the Warblers and Thrushes of Pennant and Latham.

*Sub-family Saxicolina.*

\* *Rostrum longiusculum compressum; culmine leviter arcuato, rictu imberbi.*

CAMPICOLA.

*Rostrum compressum, basi depressâ.*

*Alæ mediocres; remige 1<sup>mâ</sup> brevissimâ, 2<sup>dâ</sup> et 7<sup>mâ</sup> æqualibus, 3<sup>tiâ</sup>, 4<sup>tâ</sup>, et 5<sup>tâ</sup> æqualibus, longissimis.*

*Cauda æqualis.*

*Pedes graciles, tarsorum squamis integris.*

*Bill compressed, the base depressed. Wings moderate, the first quill very short, the second and seventh equal; third, fourth, and fifth equal, and longest. Tail even. Legs slender, scales of the tarsi not divided.*

*Type. Le Traquet Imitateur. Le Vaill. Ois. d'Afr. pl. 181.*

172 Mr. Swainson on several new groups in Ornithology.

I believe this form is peculiar to Africa: several new species have been discovered in that country by my valued friend Mr. Burchell, now engaged in exploring the Forests of Matto Grosso, and the Cordelleras of Peru.

\*\* *Rostrum breve, rectum, depressum, culmine subrecto, rictu barbato.*

FLUVICOLA.

*Alæ elongatæ, remigibus 2<sup>dâ</sup> et 3<sup>tiâ</sup> æqualibus, longissimis.*

*Cauda mediocris, subrotundata.*

*Pedes graciles, tarsorum squamis anterioribus divisis, lateralibus obsoletis.*

*Wings* elongated; the second and third quill equal and longest.

*Tail* moderate, slightly rounded. *Legs* slender; anterior scales of the tarsi divided, lateral scales obsolete.

I cannot with any certainty, quote a typical example of this new form, of which I possess two distinct species from Brazil.

SAXICOLA. *Bechst.*

*Alæ breviusculæ; remige 1<sup>mâ</sup> brevi, 2<sup>dâ</sup>, 3<sup>tiâ</sup>, 4<sup>tâ</sup>, 5<sup>tâ</sup>, et 6<sup>tâ</sup> æqualibus, longissimis.*

*Cauda rotundata.*

*Pedes longi, graciles, tarsorum squamis omnibus integris.*

*Wings* rather short; the first quill short, the third, fourth, fifth, and sixth equal, and longest. *Tail* rounded. *Legs* long, slender; all the scales of the tarsi entire.

Type. *Motacilla rubecola*. Linn.

This type occurs both in Europe and Africa.

SIALIA.

*Rostrum breve, basi depressum, lateribus compressis; culmine subelevato; naribus plumulis setaceis obtectis; rictu lato, sub-barbato.*

*Alæ elongatæ; remige 1<sup>ma</sup> spuria, brevissimá, 2<sup>da</sup> et 4<sup>ta</sup> fere æqualibus, 3<sup>ti</sup> longissimá.*

*Cauda subfurcata.*

*Pedes breviusculi, subfortes; tarsorum squamis lateralibus integris.*

*Bill* short, the base depressed, the sides compressed, culmen slightly elevated: *nostrils* partly hid by setaceous feathers: *mouth* wide, and slightly bearded. *Wings* elongated, the first quill very small; the second nearly equal to the fourth, the third longest. *Tail* slightly forked. *Legs* rather short, robust; lateral scales of the tarsi entire.

Type. *Sylvia Sialia*. Wilson, 1. pl. 2. f. 3. (*Sialia Wilsonii*. Sw.)

The habits and economy of this bird are so peculiar, and unite the characteristics of so many different families, that its natural affinities are extremely doubtful. Its frugivorous habits, however, have induced me, for the present, to place it at the confines of the Thrushes. Its true situation I consider as one of the most interesting points in the study of natural affinities.\*

Family Pipridæ.

PIPRAEIDEA.

*Rostrum ut in genere Piprâ.*

*Alæ elongatæ, remigibus 1<sup>ma</sup>, 2<sup>da</sup> et 3<sup>ti</sup> fere æqualibus, longissimis.*

*Cauda mediocris, ferè æqualis.*

*Pedes breves, subfortes; digito exteriori medio ad basin conjuncto: tarsorum squamis anterioribus divisis, lateralibus integris.*

*Bill* as in Pipra. *Wings* long, the first, second, and third quills nearly equal and longest. *Tail* moderate, nearly even. *Feet*

\* I have recently received another beautiful species from Mexico.

short, rather strong; the outer toe connected to the middle toe at the base; anterior scales of the tarsi divided, lateral scales entire.

Type. *P. cyanea*.

*P. Cyanea, subtus pallidè fulva; fronte, capitis lateribus, auri-  
busque nigris; occipite uropygioque azureis.*

*Habitat in Brasiliâ.*

One specimen of this beautiful bird occurs in a fine collection, recently sent to me from the interior of Brazil by Dr. Langsdorff. This enthusiastic Naturalist is now traversing the inland provinces of that vast empire, by command of the Emperor of Russia. He has done me the honour to request I will publish his Ornithological discoveries; and the portion he has already sent for that purpose, enables me to say they are very important.

#### PACHYCEPHALA.

*Caput magnum.*

*Rostrum breve, forte, crassum, compressum, fortiter emarginatum; gonyde ascendente; culmine arcuato; naribus plumulis setaceis obtectis; rictu barbato.*

*Alæ mediocres, sub-rotundatæ, remige 1<sup>mâ</sup> brevissimâ, 2<sup>dâ</sup> et 3<sup>tiâ</sup> gradatis, 4<sup>tâ</sup>, 5<sup>tâ</sup>, et 6<sup>tâ</sup> ferè æqualibus, longissimis, 7<sup>mâ</sup> et 3<sup>tiâ</sup> æqualibus.*

*Cauda longiuscula, æqualis.*

*Pedes subfortes, mediocres; tarsorum squamis lateralibus integris.*

*Head large. Bill short, strong, thick, compressed, strongly notched; gonyes ascending; culmen arched; nostrils concealed by small setaceous feathers; mouth bearded. Wings moderate, slightly rounded; first quill generally very short, second and third graduated, fourth, fifth, and sixth, nearly equal and longest; seventh and third equal. Tail rather lengthened, equal. Feet strong, moderate, lateral scales of the tarsi entire.*

Type. *P. fusca*. Vig. and Horsf.



The natural situation of this genus will entirely depend upon the nature of its food and economy, both of which appear to be unknown. The bill seems to indicate a habit purely insectivorous. I possess seven or eight species, all from New Holland.

[*To be concluded in the next Number.*]

---

ART. XVI. *Contributions to the British Fauna.* By  
GEORGE JOHNSTON, M.D., *Fellow of the Royal College  
of Surgeons of Edinburgh.*

I SUBMIT these contributions to the public with considerable diffidence. Our general systematic catalogues, such as those of Pennant, Turton, and Stewart, give a very imperfect view of even the present state of knowledge concerning the Invertebrate Animals of Britain; and the great price of most of the works limited to the elucidation of particular families or classes, puts them beyond my reach. It may seem, therefore, that I am scarcely entitled to come forward as a contributor to a Fauna, of the extent of which I acknowledge myself ignorant. But, in this country, systematic Zoology has probably suffered more from the backwardness of its friends in publishing their discoveries, than even from the multiplicity and perplexity of synonymes. Were it not so, our Fauna would not, surely, at this time, be in such a defective and imperfect state, that no sooner does the student enter upon the investigation of the inferior classes, than he is perplexed with the crowd of animals which present themselves, either wholly unknown, or, if known, scarcely to be recognised in the descriptions which have been given. Anxious to add what little assistance I can to the completion of a work so desirable and needful as a British Fauna, I shall run the risk of being blamed for describing as rare that which is common, and as new that which is well known, rather than that those species which I consider new should be left longer undescribed; and my descriptions I trust will be found sufficiently minute, though they affect not

the precision of a Monograph, to enable any one conversant with the subject, to determine, whether the objects I present him are already familiar to naturalists or not.

Class.	CRUSTACEA.	} Lamarck.
Order.	HETEROBRANCHIA.	
Sect.	AMPHIPODA.	
Gen.	GAMMARUS.	

1. GAM. MACULATUS.

DESC. *Body* six lines long, smooth, glossy; back dusky with a faint yellow band across each segment, and a row of yellow spots along each side, most conspicuous on the posterior half of the body; sides lighter-coloured, faintly marked with yellow. *Antennæ* transparent, unspotted, ciliated with long hairs; superior longest; basilar joint shorter than the second or third. The *seta* is one half the length of the last joint. *Eyes* large, oblong, running backwards, and having the appearance rather of a blotch of a fine red colour than of eyes. *Arms* alike, with oval dilated monodactyle hands, hairy, particularly on their inner margin. *Legs* white, monodactyle, armed with bristles.

*Hab.* Sea coast near Berwick, rare.

*Obs.* The specimen from which the above description was taken, was found amongst some corallines dredged from deep water. It belongs to Leach's restricted genus *Gammarus*, of which he has described four species. Three of these are well known to me. His *G. aquaticus* is common here, as every where else, in our wells and ditches; the *G. locusta* swarms in the pools left on the recess of the tide; and the *G. marinus*, remarkable by its strongly ridged back, is frequently taken here, in great abundance, in the baskets used for catching crabs. Our animal is quite distinct from any of these, nor can it be the *G. Camylops*, which I have not seen, for that is characterized by having "flexuous eyes," a character not in the least applicable to our *G. maculatus*.

## 2. GAM. PUNCTATUS.

DESC. *Body* eight lines long, smooth, olive-green, when dead changing to a sand-colour, speckled, particularly on the sides, with minute black dots, and marked on the back with numerous deeply impressed punctures. *Antennæ* stained or annulated with brown; superior nearly as long as the body, the third joint much shorter than the two preceding, the last very long, and armed at each articulation with a whorl of bristles; inferior thicker and shorter than the superior, with the basilar joint shorter than the second or third. *Eyes* round, brown, placed between the antennæ; after death they become red. *Arms* with large, nearly equal, ovate-oblong hands, monodactyle, ciliated on their inner margins. A deep semilunar fissure between the wrist and hand, and between the wrist and preceding joint of the first pair; the hand of the second pair with an obsolete tooth, and the fissures less obvious. *Claws* conical, sharp, aduncous. *Legs* monodactyle, nearly of the colour of the body, hairy; the hairs of the two short pairs being generally distributed, those of the three longer pairs collected into little fascicules about the joints. *Caudal processes* three pairs, bifid, with short branches,—the third pair terminal, conical, and very short.

*Hab.* Amongst confervæ in pools left by the tide, very common near Berwick.

*Obs.* In the arrangement of Dr. Leach this is an *Ampithoë*. He describes one species, the *Cancer Gammarus rubricatus* of Montagu, (Linn. Trans. ix. 99. tab. v. fig. 1.) which differs from ours in the following particulars:—it is of a “reddish, or pale pink” colour; the eyes are crimson, in ours brown, and so dark that if not attentively examined they might be pronounced black; the hands have no notch or fissure between their articulations; and, if Montagu’s figure be correct, the outline of the body is different. Moreover, in the description, Montagu makes no mention of the punctures on the dorsal portion of the segments, a character not likely to have escaped the notice of that excellent naturalist.

## 3. GAM. DUBIUS.

DESC. *Body* between two and three lines long, smooth, corneous, when dead becoming yellowish-brown, marked across the back with a few red lines. *Antennæ* rather more than one half the length of the body, slender; nearly equal, armed with very short weak spines; basilar joint of the superior longer than the second or third, which indeed might with as great propriety be reckoned amongst the articulations of the last joint as distinct joints; basilar joint of the inferior shorter than the succeeding. *Eyes* black, roundish, placed at the base of the antennæ. *Arms* with nearly equal hands, monodactyle, oblong, not much dilated, and sparingly ciliated. They very much resemble those of the preceding species in their form, but are rather smaller in proportion to the body. *Legs* spiny, spines not collected into fascicules, but distributed along the whole member, and both the short anterior and long posterior legs are similar in this respect, monodactyle. *Natatory fins* long, divided, and beautifully ciliated. *Caudal processes* three pairs, long, with aciculate branches. Two rather long conical spinous processes terminate the tail, and above these are two much smaller papillæ.

*Hab.* Amongst confervæ in pools left by the tide, not rare near Berwick.

*Obs.* I find from notes taken several years since, that I then considered this species synonymous with the *Pherusa fucicola* of Leach, but on a more attentive examination I am inclined to consider them not only as distinct, but perhaps scarcely pertaining to the same genus, if genera are to be established on such characters as that distinguished naturalist seems to think sufficient. In the figure of the *Pherusa fucicola* given in the Supplement to the Encyclopædia Britannica, the second joint of the superior antennæ is represented as elongated, the first pair of feet or arms filiform without any hand, and the hand of the second pair oval with a very small claw. There is also a considerable difference about the tail, the *Pherusa* having no terminal conical processes. Other distinctions might be mentioned, but those already specified seem of as high a value as many of those which divide the genera of

Dr. Leach. I must confess I can see no necessity or propriety in generically separating animals similar in habits, and, so far as we know, in structure: and at all events the attempt seems premature, as our acquaintance with the species is as yet too limited to enable us to appreciate the rank and value of the respective characters.

## 4. GAM. NOLENS.

DESC. *Body* about three or four lines long, not much compressed, smooth, corneous, red after death. *Antennæ* not more than one-third the length of the body, slender, tapered, with a whorl of short spines at each articulation: superior shortest, three-jointed, all the joints short: inferior four-jointed, basilar joint shorter than the second or third. *Eyes* black, roundish, placed at the base of the antennæ, not marginal. *Arms* monodactyle; first pair with a small hand; the second with the hand more dilated, hairy on their inner margins. *Legs* monodactyle, spinous; spines not collected into fascicules, with the exception of the little bunch of hairs at the foot of the claws, which seems common to the genus. *Caudal processes* two pairs, with the branches mucronate. *Tail* short, smooth and simple above, terminating in a papilla, but without terminal processes.

*Hab.* Amongst confervæ, not rare.

*Obs.* To the preceding species I gave the specific appellation *dubius*, since it seemed doubtful to which of the genera of Dr. Leach it ought to be referred; this I have named *nolens*, as it will arrange with none of them. It seems allied to the *Gammurus monoculoides* (Linn. Trans. xi. 5. tab. ii. fig. 3.) of Mr. Montagu.

I have carefully compared the species just described with those of Montagu in the 7th, 9th, and 11th volumes of the Linnean Transactions; and with those of Dr. Leach in the Edinburgh Encyclopædia, in the Supplement to the Encyclopædia Britannica, and in the Entomologist's Useful Compendium of Mr. Samouelle, and I entertain no doubt of their being perfectly distinct from any known to those eminent naturalists. With the exception of the *G. maculatus*, of which I have seen a single

specimen only, the others are neither of them rare, and there is no reason to believe that they are confined to this neighbourhood, but the similarity in their external form and habits has probably occasioned them to be confounded together, and with others better known.

An enumeration of such other species of this family as have been detected in this neighbourhood, may, perhaps, prove not uninteresting to the British Zoologist, as illustrative of the distribution of our native animals. The *Talitrus Locusta* and *Orchestia littorea* of Leach are both very common. The former affects our sandy shores, the latter gravelly and clayey places at the sides of our river, nor have I observed the species intermixed. The *Mæra grossimana* and *Jassa pulchella* of the same author, are neither of them rare; and the *Gam. monoculoides* of Montagu occurs abundantly. The arms of this species have dilated ovate hands, the second pair larger than those of the first, and we presume no doubt can exist of its being a true member of the family. The *Corophium longicorne* is common, during the Autumnal months, in pools of brackish water, left at the sides of the river, on the recess of the tide. Along with it we find, in great profusion, a species of *Sphæroma* which seems little known. It is probably the *S. rugicauda* of Dr. Leach, but as I have some doubts on the subject, and as he has given no detailed description of his species, I may be excused for adding the following :

SPHÆROMA RUGICAUDA?

Leach, Linn. Trans. xi. p. 369. Edin. Encyclop. vii. p. 405.  
433.

DESC. *Body* rather more than the third of an inch in length, of a cinereous colour varying a good deal in its intensity, minutely speckled with black dots, often marked with a light-coloured band down the back. The whole body is granulated, the granulations of the caudal segment rather larger than those of the segments of the body. Four *antennæ* seated on a peduncle in front of the head, tapered, four-jointed, the last joint composed of numerous small articulations, with a whorl of short hairs at the origin of each. The internal *antennæ* are about one-half the length of the

external. The *head* is narrower than the following segment, and on each side are the black reticulated prominent *eyes*, which do not touch the external margin, and are not perfectly round in their circle. The *segments of the body* are short, transverse, convex, and nearly equal, those towards the tail being rather the narrowest. They are seven in number, and bear each a pair of *legs*. These are six-jointed, and the tarsal joint is armed with a stout claw and a smaller inner one. The two first joints are nearly equal, the third and fourth are shorter, while the two succeeding are again a little lengthened. The inner surface of the whole, except the first, is clothed with short soft hairs; a tuft of hairs is placed on the middle of the external side of the second joint, another at the base of the third, and a few hairs at the base of the fourth. The *tail* consists of one large segment, rounded behind, obliquely truncated at the sides. The *lamellæ of the caudal bifid process* are equal, of a linear oval shape, neither ciliated nor serrated. The animal swims with considerable velocity, and often on its back. It contracts itself into a ball when alarmed; and it can live a considerable time out of the water. It agrees in almost every respect with the description of the *S. rugicauda* given by Dr. Leach, with this exception;—in it the body is said to be *smooth*, in ours it is *granulated*; and perhaps the term *rough*, which is applied to the *rugicauda*, may not be synonymous with *granulated*, which more properly characterizes the species we have attempted to describe.

Berwick, August 12, 1826.

---

ART. XVII. *Some Observations on the Anatomy of the British Birds of Prey.* By WILLIAM YARRELL, Esq. F.L.S.

[To the Conductors of the Zoological Journal.]

GENTLEMEN,

IF the following remarks on some peculiarities observable in the species of the first two genera of British Birds, have sufficient novelty to recommend them to a place in your Journal, they are

entirely at your service. They are the result of observations founded, and notes taken, during an examination of the bodies of most of the British Birds of prey, including some of very rare occurrence.

In commencing these observations, however, I confess, without reserve, my want of anatomical knowledge to do justice to so interesting a subject, and therefore the more readily consign them to your better judgment, to be altered or curtailed as their various imperfections may require.

The skeletons of birds exhibit considerable resemblance to the bony structure of the *Mammalia*. The principal differences are—

A cranium that has no real sutures.

An upper jaw that does move.

Two pairs of extra bones in the head.

A single occipital condyle.

More than seven cervical vertebræ.

Motionless dorsal vertebræ.

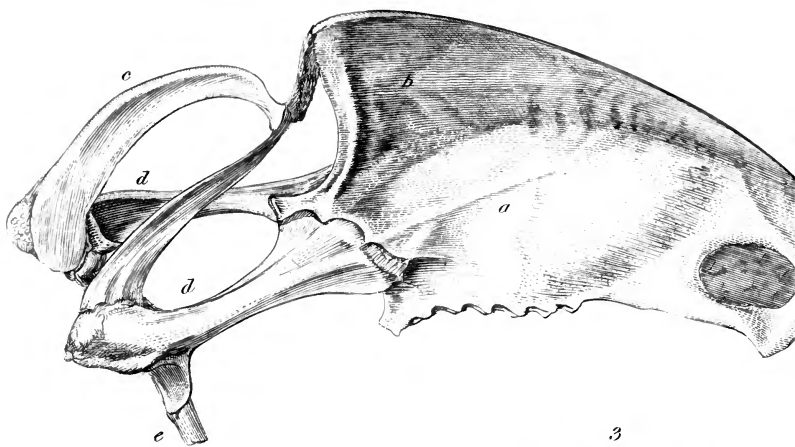
Clavicles constant, and an os furcatorius or furcula in all those birds exercising the power of flight.

The power of flight is one of the decided marks of the distinct organization of this class, and as one division of the first genus *Falco* appears to possess this power in the highest degree of perfection of which it is susceptible, I shall briefly consider the conditions necessary to produce this power in its fullest extent. These are, large and powerful pectoral muscles; great extent of surface, as well as peculiarity of form in the wing; and feathers of firm texture, strong in the shaft, with the filaments of the plume arranged and connected to resist pressure from below.

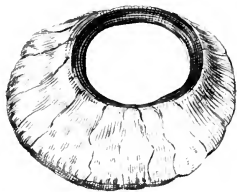
A certain degree of specific gravity is necessarily imparted by large pectoral muscles, and the power of these muscles may be estimated by the breadth of the sternum and the depth of its keel, as affording extent of surface for the attachment of the large muscle by which the wing is depressed. As an illustration of this form the breast bone of the Peregrine Falcon (*Falco Peregrinus*) is represented Plate VI. No. 1, of the natural size, which exhibits the breadth of the sternum, the depth of the keel, as well as the strength of the clavicles; and the power of flight peculiar to



1



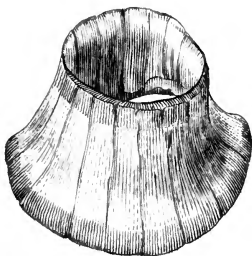
3



4



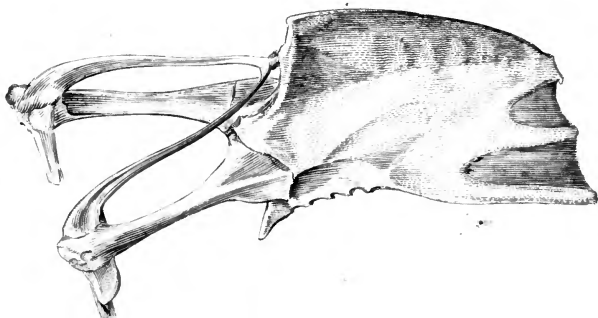
5

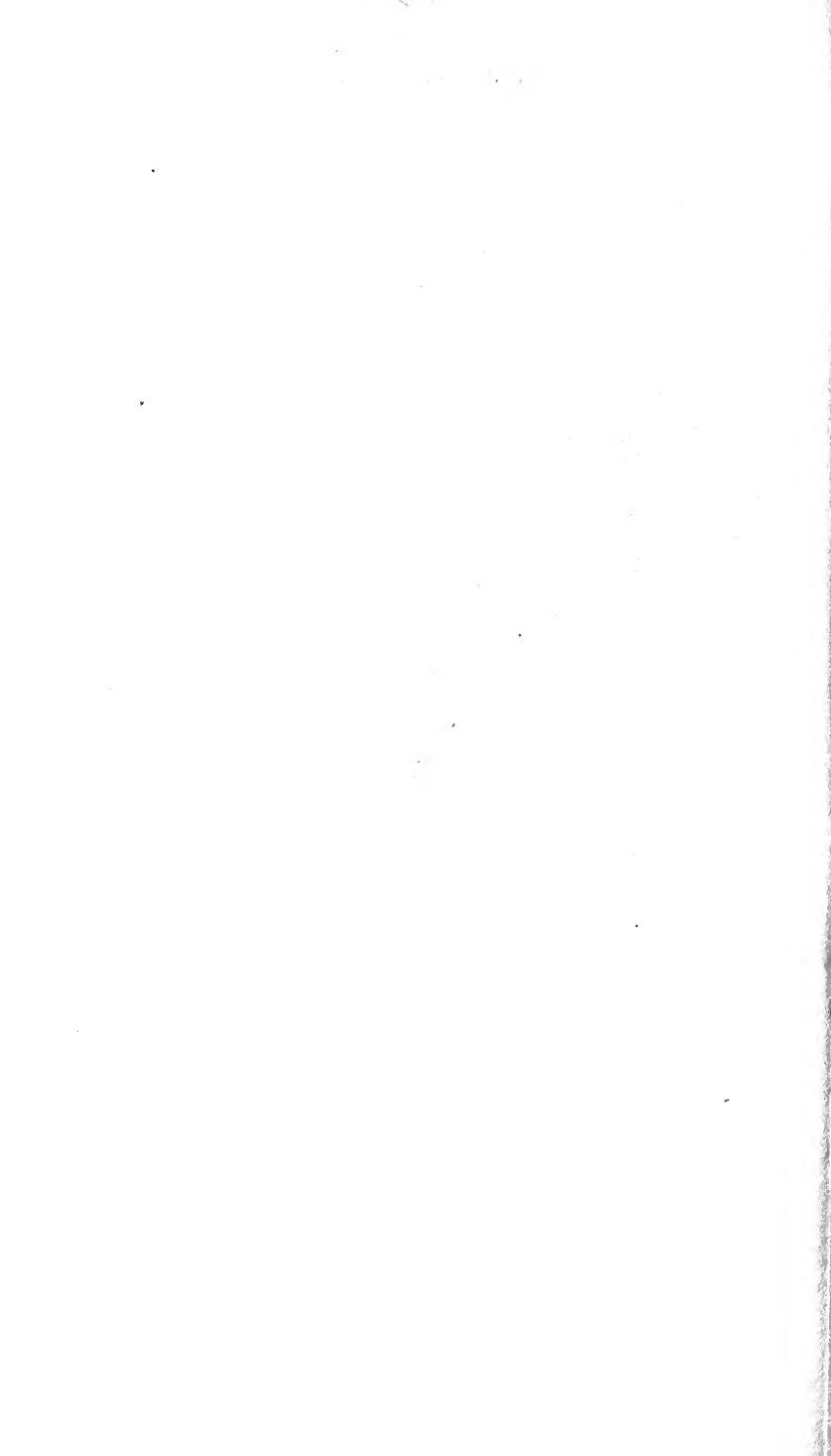


6



2





all the species of true falcons is still further illustrated by the form and substance of the os furcatorius, which is circular, broad, and strong, affording a permanent support to the shoulders. That the long and acuminate form of the wing in the true falcons, with each feather narrow, firm in consistence, the second the longest, and all gradually tapering to a point, is also best adapted for rapidity of motion, may be inferred from the examples in the various species of the genera *Hirundo*, *Scolopax*, *Tringa*, *Charadrius*, *Procellaria*, *Sterna*, &c.; but that extent of surface, and this peculiarity of form in the wing, are not in themselves sufficient alone to afford rapid flight, is proved in the genus *Larus*, the species of which, though capable of exercising their immense pinions with graceful ease for hours in succession, without any apparent lassitude, are still incapable of rapid flight, for want of strong pectoral muscles, and their consequent specific gravity. The numerous examples also furnished by the *Gallinaceous* tribe sufficiently evince, that immense pectoral muscles are insufficient when coupled with a small round wing, and afford but a short flight, sustained with great labour, rapid in a small proportion only to the strength and repetition of the impulse, and accompanied by a vibration too well known to need further remark. So material also is the perfection of the feather in the genus *Falco*, that when any of those of the wing or tail are broken, the flight of the bird is so injured that falconers find it necessary to repair them. For this purpose they are always provided with both pinion and tail feathers accurately numbered, and the mode of uniting the more perfect feather to the injured stump is described in Sir John Sebright's excellent observations on hawking.

It is difficult to estimate the comparative rapidity of flight in different birds, and our pigeons may appear to possess this advantage in a degree little inferior to the true Falcons, but these birds are deficient in natural courage, and are unable under certain circumstances, to avail themselves of those powers with which they are gifted: to these examples others might be added, and the impression produced by the threatened attack of a powerful enemy is not confined to birds.

The bodies of all the species of true Falcons, when denuded of

their feathers, are triangular in form, broad at the shoulders and tapering gradually to the tail, the muscles of the thighs and legs of great size; but these characters are less prominent in the hawks, the bodies of which are more lengthened, the legs long and slender, the pectoral muscles smaller, the wing rounded in form, the fourth feather the longest, the wing primaries broad in the middle, the inner webs overlapping the feather next in succession, and emarginated towards the end. These two divisions of the genus *Falco*, although the latter are unequal to the former in powers, are remarkable for their bold character and rapid flight, their invariable mode of striking their prey on the wing, as well as the instinctive knowledge by which they are directed to destroy life, attacking the most vital part, and penetrating the brain with their sharp hooked beak, either by one of the orbits where the bone is very thin, or at the junction of the cervical vertebræ with the occiput.

On comparing the bones of our two British Eagles, the greater power of flight appears to belong to the *Albicilla*, that of prehension to the Golden Eagle, but both exhibit various indications of great strength.

By an extended examination of the different species of Buzzards and Harriers, it will be found, that the characters described as necessary to produce rapid motion, decline gradually. The sternum decreases in size, the keel loses part of its depth, the clavicles and furcula become more slight, while the form of the cranium, the loose ruffled feathers of the neck, as well as the general downy texture of the plumage, indicate the approach to the genus next in succession. Of the bones of the different species of the genus *Falco*, generally, it may be added, that they are remarkable for their strength, such as are cylindrical being furnished with numerous transverse bony processes within the tubes, and the distribution of air throughout their internal cavities. The humerus is supplied with air through several orifices upon its inner and upper surface, and some difference will be found in the angle at which this bone is articulated with the clavicle to accomplish the ascending flight of the skylark, in contradistinction to the precipitous horizontal direction of the Falcons. The thigh bone is also sup-

plied with air by an orifice at the situation which answers to the front of the great trochanter, the large bones forming the pelvis, the vertebræ, sternum, furcula, clavicles, scapulæ, and even the ribs, are all furnished with apertures for the admission of air, supplied from the various cells of the abdomen, sides, and thorax. This distribution of air to the bones does not seem however to be absolutely necessary for flight, since the young birds of our summer visitors appear to perform their first autumnal migration with perfect ease and celerity, at an age when the cavities of their bones are filled with marrow.

The various characters of the feet are too obvious to require particular notice.

The extraordinary powers of vision which birds are known to exercise beyond any other class of animals, are in no genus more conspicuous than in that of *Falco*. Their destination, elevating themselves as they occasionally do into the highest regions, and the power required of perceiving objects at very different distances, and in various directions, as well as the rapidity of their flight, seem to render such a provision necessary. The eyes of birds are much larger in proportion than those of quadrupeds, and exhibit also two other peculiarities. The one is the marsupium, a delicate membrane arising at the bottom of the eye, and terminating at or near the edge of the crystalline lens: the other is a ring of thin bony plates, enveloped by the sclerotic coat. Comparative anatomists do not seem to be agreed as to the means by which birds obtain their power of vision, whether by an alteration in the form or situation of the crystalline lens, or by both, either or both of which, the greater quantity of aqueous humour which birds are known to possess, would seem to facilitate. The existence of a muscle attached to the inner surface of the bony hoop of the sclerotica, and inserted by a tendinous ring into the internal surface of the cornea, as shewn by Mr. Crampton,\* by which the convexity of the cornea may be altered, gives a still greater scope of action, since with two, or at the utmost three varieties of powers, the sphere of distinct vision may be indefinitely extended. Whether the five species called the

\* Annals of Philosophy for March, 1813.

true Falcons, possess, with their exclusive rapidity of flight, any power of vision beyond their generic companions, would be difficult to ascertain; but it may, while on this subject, be worthy of remark, that the irides of the *Gyr Falcon*, *Peregrine*, *Hobby*, *Merlin* and *Kestrel*, are hazel brown, or still darker, while those of all the hawks, buzzards, harriers and kites, are of various shades of yellow. I refer only to adult birds, and do not remember a single exception. A representation of the bony ring and crystalline lens of the Golden Eagle is here given, as shewing the general form of these parts in the genus *Falco*, and as a contrast to the shape of the same parts in the genus *Strix*, to be hereafter described. The number of bony plates forming this circle in the Golden Eagle is fifteen; in the White-tailed Eagle there are but fourteen.

The trachea in the different species of the genus *Falco*, exhibits none of those peculiarities of form observable in the species of some other genera. It is composed of two membranes enclosing between them numerous bony rings, forming a tube more or less perfect from end to end. These bony rings are strong and compressed. The point of divarication, the cross-bone and bronchiæ, constituting together the inferior larynx, are of the most common form, having but one pair of muscles attached; and the voice, though powerful, possesses, as might be expected, but little variation. The œsophagus offers nothing peculiar beyond that of other birds, not possessing the power of minutely dividing their food. It is plicated lengthways, allowing great extension, and its separation from the stomach is marked by a zone of gastric glands.

The stomach in birds exhibits every gradation which the various qualities of their food might seem to require, from the thin membranous pouch of the bird of prey, to the true muscular gizzard of the *Gallinaceous* tribe and others. Of the nature of the gastric fluid, and its effects on various substances in different animals, the experiments of Spallanzani have thrown considerable light, but the subject is far from being exhausted.

An opportunity which occurred to me of observing the castings or pellets of some eagles, which had been occasionally fed with dead pigeons, shewed, that the vegetable food, peas, wheat, and

barley, which had been swallowed by these birds of prey, enclosed within the crops of the pigeons, remained entire, but somewhat enlarged and softened by heat and moisture; no part of the bones remained. The intestines of birds of this genus are short and large, but the Osprey (*F. Haliaëtus*) forms an exception to this rule. To the thin membranous stomach of this bird, there is attached an intestinal canal measuring ten feet eight inches in length, and in some parts scarcely exceeding a crow-quill in size. This instance may therefore be cited as an example of an animal possessing a carnivorous stomach with a herbivorous intestine. The canal in most of the species of this genus, being, in length, compared with that of the bird itself, as three to one, but in the Osprey it is as eight to one.

In the Otter the intestinal canal is very long, equal in size, and without cæcal appendage. In the Seal the intestines are also long, with a small cæcum; may it not therefore be concluded that the small quantity of nutriment which fish, as an article of food, is known to afford, renders this extent of canal necessary in order that every portion may be extracted? The cæcal appendages in birds vary in length from one inch to twenty-four, and nature, as if to mark the uniformity of her plan, gives minute rudiments of these vermiform appearances even to birds of the most decided carnivorous habits.

Proceeding to the species of the genus *Strix*, their characters will be found as opposite to those of the true Falcons as their habits. The body stripped of its feathers has some resemblance to the triangular form of the diurnal birds of prey, but the pectoral muscles are small, the sternum, keel and clavicles diminished in size and strength, and the furcula, which in the Falcons is circular, broad, and strong, will be found in all the species of owls to be angular, slender and weak. The sternum marked No. 2, is a representation of that part in a Wood-Owl (*S. Stridula*) which weighed nineteen ounces; the sternum before referred to No. 1, as that of the Peregrine Falcon (*F. Peregrinus*) was from a male bird weighing twenty-three ounces; both are figured of the natural size, and the disproportion in extent of surface and power, will be immediately apparent. From the loose and soft nature of the

plumage in owls, as well as their deficiency in muscle and bone, rapid flight is denied them as useless, if not dangerous, from the state of the atmosphere at the time they are destined to seek their food ; but they are recompensed for this loss, partly by their acute sense of hearing, from an extension of the posterior edge of the cranium forming a conch, coupled with a very large external orifice ; and partly by the beautifully serrated exterior edge of the wing primaries, which, allowing them to range without noise through the air, enables them to approach unheard ; and the unsuspecting victim falls an easy prey to the silent flight and piercing eye of an inveterate enemy. Some increase and variation will be found in the strength and form of such of the owls as depart from the type of the true nocturnal bird. In the snowy and short-eared owls, which are described as occasionally seeking their food by day, the furcula is stronger and less angular in proportion than in the wood and barn owls.

The external convex form of the bony ring in the Golden Eagle, will be found to extend through all the species of every genus of British Birds, except the owls, in all of which it is concave. The bony ring of the Snowy Owl (*S. Nyctea*) is represented of the natural size, and the fifteen plates forming the circle, are considerably lengthened. The transparent cornea being placed as it were at the end of a tube, is thus carried forward beyond the intervention of the loose and downy feathers of the head. It is this position of the eyes, giving a particular fullness and breadth to the head, which has gained for the owl the intellectual character universally awarded to it. In other birds the position of the eyes is much more lateral.

The crystalline lens of the Snowy Owl is also contrasted with the same part in the Golden Eagle. The *extent* of vision enjoyed by the Falcons is probably denied to the owls, but their more spherical lens and corresponding cornea give them an *intensity* better suited to the opacity of the medium in which they are required to exercise this power. They may be compared to a person near-sighted, who sees objects with superior magnitude and brilliancy when within the prescribed limits of his natural powers of vision, from the increased angle these objects subtend.



The trachea of the different species of owls so nearly resembles the same part in the falcons, as to make a separate description unnecessary, and the same may be said generally of the œsophagus, stomach, and intestines, as the similarity of food would appear to require. The contents of the stomach have always been a subject of examination, but their usual food being known, I have but to add, that the short-eared owl (*S. Brachyotos*) is the only bird of prey in which I ever found the remains of a bat. In the species of the genus *Strix*, the two cæcal appendages will be found considerably developed; in the barn owl (*S. Flammea*) as well as in the short-eared owl, they are small at their origin, afterwards dilated, and each one inch and three-quarters in length.

I am, Gentlemen,  
Yours, &c.

WILLIAM YARRELL.

Ryder Street, Oct. 1826.

---

DESCRIPTION OF PLATE VI.

- No. 1. Breast bone of the Peregrine Falcon.  
a, the sternum; b, the keel;  
c, the furcula, d, d, the clavicles;  
e, scapula broken off.
- No. 2. Breast bone of a Wood Owl.
3. Bony ring of a Golden Eagle.
4. Crystalline lens of the same bird;  
a, the anterior surface, somewhat less convex than  
the posterior one.
5. Bony ring of a Snowy Owl.
6. Crystalline lens of the same bird;  
a, the anterior surface, also less convex.

Nos. 3 and 5. These circles seem admirably adapted to afford support to the soft parts of the globe of the eye; the orbits in birds being less perfectly defined, generally, than in most other animals.

ART. XVIII. On the Genus *Lacuna*. By Dr. TURTON.

IN the Conchological Dictionary the subjects of this family were first collected together, and formed a division of the genus *Turbo*. From the *Turbo* however, as it is defined by Lamarck, they so materially differ in many circumstances, as to form of themselves a truly new and characteristic genus. None of them, we believe, were known to Linnè, or the above illustrious author. Their essential differences from the *Turbo* are, 1. They are of a thin, and generally of a semi-transparent substance; 2. They are clothed with an epidermis or thin outer skin; 3. There is a groove along the pillar, terminating in a cavity at the upper end. This last mark is to be found only in this and the genus *Eburna*, which are of entirely distinct divisions; the *Eburna* is sarcophagous, and marked by a notch or reflexure at the base of the aperture. The *Lacuna* is phytophagous, with the base of the aperture entire. All the species are found feeding on Fuci.

*Testa tenuis, conoidea vel subglobosa, epidermide induta. Apertura integra, rotundato-ovata; labiis supernè disjunctis. Columella planulata, sulco longitudinali supernè in umbilicum desinente. Operculum corneum.*

Shell thin, conoid or somewhat globular, clothed with an epidermis. Aperture entire, roundish or oval, with the lips disunited at top. Pillar flattened, with a longitudinal groove which terminates at the upper end in an umbilicus. Operculum horny.

\* *Spirá laterali, vix productá.*

Spire lateral, very slightly produced.

1. *L. pallidula, testá semiovatá, flavescenti-corneá: spirá truncatá: aperturá dilatatá, subangulatá.*

Shell semioval, yellowish horn-colour: spire truncate: aperture dilated, somewhat angular.

*Nerita pallidula.* Da Costa, t. 4. f. 4. Donovan, t. 16. f. 1.

Montagu, p. 468.

*Turbo pallidulus*. Turton, Dict. p. 192.

The spire of this species is quite flattened, consisting of three or four well-defined volutions; and the aperture has a rather square outline.

2. *L. Montacuti*, testá subglobosá, semipellucidá, efusciatá: spirá subproductá: aperturá rotundatá.

Shell somewhat globular, semitransparent, without bands: spire slightly produced: aperture rounded.

*Helix Lacuna*, Montagu, 428. t. 13. f. 6.

When deprived of its brown epidermis it is white in colour, or shews various shades of purple or red, but always without bands.

3. *L. Puteolus*, testá semioblongá, obliquá, purpureá, fasciis tribus obscurioribus: aperturá ovali-rotundatá.

Shell roundish-oblong, oblique, purple with three deeper bands: aperture roundish or oval.

*Cochlea parva*, Da Costa, 85. t. 8. f. 12.

*Helix Lacuna*, var. Montagu, 429.

*Nerita rufa*, Dors. Cat. t. 14. f. 12.

Montagu, Supp. 151.

*Turbo Puteolus*, Turt. Dict. 193.

Shell much thicker than the last, always marked with three dark bands, and when full grown has the larger volution considerably produced obliquely.

\*\* *Spirá productá, conoideá.*

Spire produced, more or less conoid.

4. *L. quadrifasciata*, testá conicá, fasciis quatuor ochraceis; anfractu majori basi subcarinato; sulco columnari parvo.

Shell conical, with four ochraceous bands, the larger volution slightly carinate at the base: the groove on the pillar small.

*Turbo quadrifasciatus*, Montagu, 328. tab. 20. f. 7.

The bands are sometimes faint and nearly obliterated; but the shell may always be distinguished by the slightly carinated appearance of the larger volution.

5. *L. vincta*, testá oblongo-conicá, fasciis quatuor fuscis: anfractu majori ecarinato: sulco columnari dilatato.

Shell oblong-conical, with four brown bands; the larger volution not carinate at the base: the groove on the pillar dilated.

*Turbo vinctus*. Montagu, 307. t. 20. f. 3.

Shell much larger than the last, and distinguished by the rounded base of the larger volution, and the more open groove down the pillar. The bands are sometimes obliterated, and rarely the four bands unite into two broader ones.

6. *L. canalis*, testá conoideá, opacá, efasciatá: labio exteriori crasso.

Shell conoid, opaque, without bands; the outer-lip thickened.

*Turbo canalis*, Montagu, 309. t. 12. f. 11.

A shorter shell than the last, and much thicker; the outer lip is also hard and thickened.

7. *L. crassior*, testá conoideá, crassá, opacá: anfractibus tumidis; majori subcarinato: labio externo incrassato: sulco columnari et umbilico obsolete.

Shell conoid, thick, opaque; volutions tumid, the larger one slightly carinate at the base; the outer lip thickened; the groove and umbilicus of the pillar obsolete.

*Turbo crassior*, Montagu, p. 309. t. 20. f. 1.

This seems to be the link connecting the two families of *Turbo* and *Lacuna*; but evidently belonging to the latter, as the groove and umbilicus are sometimes faintly visible. When fresh it is covered with a pale-brown, much wrinkled skin, under which it is of a polished, opaque, milk-white colour. The very tumid volutions, and the subcarinate base of the larger one, distinguish it from the *Lacuna canalis*.

ART. XIX. *A Description of several new Species of Chitones, found on the Coast of Chili, in 1825 ; with a few remarks on the method of taking and preserving them.*  
By JOHN FREMBLY, R.N., *Corresp. Memb. Zool. Soc.*

THE difficulty of capturing, and the concealed situations inhabited by this interesting genus, is perhaps the principal cause of so small a number of its species being known: with the hopes of adding a few to the catalogue, my attention was principally directed towards them, whenever opportunities for collecting offered themselves.

Having been so fortunate as to discover some decidedly new species, and others which were but imperfectly known, and of which the descriptions and figures were very incomplete, I have been induced to submit the following details to the public, but with the conviction that my small stock of knowledge in the science is scarcely sufficient to do justice to the subject.

The decided and strongly marked characters of the species which I am fortunate enough to bring to notice, render it unnecessary for me to depart from the mode of description generally adopted by Conchologists, in recounting the peculiarities of the individuals of this genus already known. Their habits and economy, as far as I have been able to inform myself, will be detailed at length.

The unnatural distortions, and imperfect state of preservation in which the species are generally brought to us, is an evil that Conchologists have long had reason to complain of; and which prompts me to place in this article a description of my mode of taking and preserving these animals, hoping it may afford to future collectors the advantages I have derived from it myself.

Some care and dexterity is requisite in taking the animals from the substances to which they attach themselves. On turning a stone (on the underside of which they are generally found), force will not be necessary to detach them, if instead of attempting to tear them directly from the stone, they are gently slid off from it:

this proceeding is at all times advisable, when it is possible to put it into execution, as by it a specimen may be removed without the assistance of a knife or injury to the margin, which in this genus forms an important character, as well as adds beauty to the species; whereas by endeavouring immediately to detach them, considerable force is often requisite, and without great care in the use of the knife the margin will suffer by the attempt.

The haunts of some of the species will not admit of this mode of capture, especially of those found in the fissures of rocks; these notwithstanding may be taken without mutilation of the margin, by taking care not to touch the animal before the knife is inserted under the shell; this being done, if the knife be quickly turned, it will easily remove the specimen: not touching the animal until the moment of capture, is a very necessary precaution in collecting all the large species, as their adhesion is so strong that they not unfrequently part with a portion of their shells rather than let go their hold: but in a quiescent state, or before they are conscious of danger, their attachment is very slight.

The collecting box I have been in the habit of using, was a rectangular one of wood, which I thoroughly wetted on the inside. Immediately after a specimen was taken, its flat surface was applied to the bottom or sides of the box, to which in most cases it adhered, especially if it had been taken from a smooth and flat surface: in this position the animals were suffered to die. The space immediately surrounding them soon becoming dry, they mostly remained steady in the place they first attached themselves to. It appears advisable not to let one specimen touch another, as they are apt to crawl over each other when conscious of their proximity. Although this manner of collecting I have found from experience to be the best, yet in many cases it may not be convenient. They should, however, as soon as possible after being conveyed home, be put into a good sized flat vessel, with a little sea water in it; and if they have not been long taken, or, the animal much injured, they generally expand themselves to their natural positions, and remain adhering to the vessel until life becomes extinct. I have also found in some cases, when circumstances have not allowed me to attend to them presently after collecting, and they have

been suffered to die unheeded, that the contracting muscles have become sufficiently relaxed to allow them to be put into a natural position without injury to the shell, or separating the valves, but this is too uncertain an occurrence to be depended on. The animal, being dead, is to be extracted from the shell with a sharp pointed knife, beginning at the posterior part, and cutting round on both sides towards the head. I advise this mode of proceeding from the internal structure of the valves being less liable to injury than by cutting promiscuously from head to tail, in which case the knife would cut against the sharp edges of the valves, and cause much damage to them; but in the former method of operating the knife only passes over them in the direction in which they lie, consequently not with so much danger of detriment to the shell as the other. After cleansing the shell it should be laid on a flat board, with the margin spread in the same manner in which it was observed to be before the specimen was taken, and to prevent the ends of the shells being brought towards one another by the contraction of the muscles in drying, another flat board should be placed over them, with a weight proportionate to the size of the shells; they should be allowed to dry very gradually, and it will be necessary to pay some little attention to them while drying, in order that the edges of the margins may not become shrivelled up by drying sooner than the other part.

Following the example of the writer of the interesting paper on the British Chitones, which appeared in the 5th number of this work, I have divided the genus into sections, corresponding with the character of the margin, the propriety of which arrangement appears to be too evident to meet with any opposition.

It is perhaps worthy of remark, that out of more than 500 specimens, not one occurred with only seven perfect valves; but in a few instances I have found them with one of the valves imperfectly formed, which, on a slight inspection, might be overlooked, being nearly, or wholly, covered by its neighbours. These malformations, I have no doubt in my own mind, proceed from accident during the early period of the animal's existence. It may be answered that these, as well as others of this class, have the power of replacing any injury they may receive in their covering during

their young state, but this reproduction is very partial in this tribe; nor do I suppose that when a valve has been so materially injured as to lose its power of restraint on the contracting muscles, that it can retain its situation, but must be quickly displaced or concealed by the valves next in succession closing up the gap. Accidents of this kind, I am inclined to think, have occurred to those species, which are described as having only seven valves; and it would be an advantage to the science if the possessors of the seven valved species would take the trouble to give them a minute investigation, as much valuable information may be elicited, and a subject on which much doubt at present exists might be decided.

I must not, however, conclude these remarks without acknowledging the assistance I have received from Mr. G. B. Sowerby, without which I should hardly have ventured to intrude on the public notice.

\* LIGAMENTO MARGINIS SPINOSO.

1. *Chiton spiniferus*.

C. testâ oblongo-ovatâ, ligamento marginali lato, spinifero, spinis longiusculis; valvâ anticâ radiatim granosâ; areis centralibus valvarum posticarum longitudinaliter concinnè sulcatis, lateralibus rotundatis, radiatim granosis.

Tab. Supp. XVI. f. 1.

Syn. *Ch. aculeatus*. Barnes.

*tuberculiferus*. Sowerby in T. C.

Shell opaque, oblong ovate, reddish brown, glossy; inside reddish white: valves eight, the posterior angles of which do not cover the anterior ones. Anterior valve with generally nine rows of raised dots diverging from the apex, but the number perhaps varies with the age of the shell. Second valve rather acutely beaked and carinated, longer than the five following, which are striated and shaped alike; these all rise into rather an acute beak, are carinated, each side of the carina divided into two distinct portions, the anterior one the largest, and bearing broad irregular



longitudinal striæ; a prominent row of raised dots extending from the apex to the anterior angles of the valves separates the compartments; the posterior portion glossy, with fine concentric striæ: the posterior margins with tooth-like granulations. Last valve striated like the anterior compartments of the others, and rising into rather a prominent beak, leaning towards the posterior margin: from under the beak are raised dots, disposed in a similar manner to those on the anterior valve.

Border coriaceous, thick, broad, rough, greenish or orange coloured, and in the younger specimens thickly studded with blunt spines, but in the old shells the spines are short and scanty, and generally covered with corallines; the inner edge of the border inserting itself under the posterior angles of the valves, has the appearance of being deeply serrated. We have found this species five inches in length, and nearly three in breadth.

These inhabit the rocks on the coast of Chili; at Valparaiso we found several specimens in very exposed situations, so much so that collecting them was attended with much difficulty, and not unfrequently with danger, from the violence of the sea breaking on the rocks, to which they attach themselves very strongly. They are generally covered with short sea weed.

We have been obliged to alter the name a second time, because the name *aculeatus* given to it by Barnes, was long since previously occupied; that of *tuberculiferus* was given from an old specimen, in which the spines were reduced in length by being broken, so that it is not applicable; we have therefore now called it *spiniferus*.

\*\* LIGAMENTO MARGINIS SQUAMOSO.

2. *C. Coquimbensis*.

*C.* testâ oblongo-ovatâ, angustâ, intus fuscâ; ligamento marginali lato, squamis oblongis, longitudinalibus; valvarum lateribus undato-sulcatis.

Tab. Supp. XVI. f. 2.

Shell ovate, narrow, opaque, greenish brown, shining; inside blackish: valves eight, the anterior with numerous undulate con-

centric ridges; the next rather acutely keeled; the five following alike: carina broad and smooth, on each side of which is a similar ridge diverging from the beaks, and forming with the carina a sagittate figure, and connected with it by several strongly marked ridges: from under the beaks to the anterior angles of the valves, extend sharp moniliform ridges, each side of which is coarsely striated longitudinally. Border thick, moderately broad, and covered with coarse seed-like scales, which are attached laterally. Length three inches, breadth one and a half.

The only part of the coast on which we have found this new species, was the south side of Coquimbo Bay: hence its specific designation. The beaks of the large specimens are generally very much eroded, and covered with *Patellæ*, *Balani* and corallines, but the young shells are often quite perfect; from one of these I have drawn the above description. I am aware there may be objections to giving the characters of young shells for the identification of species, but in this case an old shell so rarely occurs in even a moderately perfect state, that its characters could scarce have been detailed from such a specimen.

The habits of this species are very similar to those of *C. spiniferus*, with the exception that they seem to be more gregarious.

\*\*\* LIGAMENTO MARGINIS GRANULOSO.

### 3. *Chiton Cumingsii*.

*C. testâ ovatâ, valvâ anticâ bifariam radiatim granoso-striatâ; areis centralibus valvarum longitudinaliter sulcatis, lateralibus radiatim granoso-striatis.*

Tab. Supp. XVI. f. 3.

Shell semipellucid, ovate, dirty greenish brown, dorsal markings reddish brown, with spots of black, and laterally with narrow greenish white undulated lines: inside glaucous. Valves eight, the anterior with bifariously diverging granulate striæ; posterior margin a little angular: dorsal valves alike, subcarinated, divided on each side into two parts, the front with fine regular longitudinal striæ, the other compartment raised and striated like the anterior valve, as also is the posterior valve behind the beak. Beaks

obtuse, and embracing the carina. Border rather narrow, granulated, shining, greenish, divided into two parts, the upper having the smallest granulations, which in both are placed transversely.

Length two inches, breadth  $1\frac{3}{8}$ ; found plentifully at Valparaiso under stones in still water.

A variety of this species occurred, differing in these respects from the above description. Shell thicker, back more raised, and the posterior compartments of the dorsal valves less distinct. A specimen also was found shewing on the outside only seven valves, but inside the articulation of the other valve was plainly seen.

I have named this species after my friend Mr. Cumiugs, of Valparaiso, whose zeal in the pursuit of this interesting science will, I am persuaded, soon make a large addition to our present stock.

#### 4. *Chiton olivaceus*.

C. testâ ovali, latâ, olivaceâ, æruginoso-punctulatâ; valvâ anticâ posticâque radiatim-striatis; areis valvarum centralibus longitudinaliter sulcatis, lateralibus radiatim striatis.

Tab. Supp. XVI. f. 4.

Syn. *Chiton latus*. Sowerby in T. C. No. 692.

Shell opaque, ovate, olivaceous, dull, dotted with lighter coloured spots: inside glaucous. Valves eight, the anterior one with regular radiating striæ, crossed by concentric ridges; posterior margin nearly straight. Dorsal valves obtusely beaked, divided laterally into two compartments; the anterior having regular longitudinal striæ, crossed with others very minute and concentric; from under the beaks diverge to the lateral margins of the valves coarser and more irregular striæ, which raise the posterior compartment above the other. The posterior valve has a well defined apex, leaning towards the posterior margin. Border thin, moderately broad, and covered with fine shining bead-like granulations, of the same colour as the shells, divided into two distinct portions, the upper of which is composed of much finer beads than the lower, and which, as in the last species, are placed transversely.

This species grows to a large size ; one in my possession measured when alive upwards of four inches in length ; but the general size is about three inches. We have observed amongst these a variety much narrower than the generality of them, but not differing in any other respect from the above description.

This is not given here as a new species, a specimen from the Tankerville Collection, now in the possession of the Rev. Dr. Goodall, agreeing so nearly with mine, that there can be no doubt but they are of the same species. It has, I understand, been called *C. latus*, but that term would not be applicable to both varieties. I have therefore taken the liberty of naming it from its colour, to which I am aware there are many objections, nor would it have been adopted but from the unvarying hue I have observed to run through the whole of the specimens which have passed under my notice.

Amongst the very young shells, I observe that some of them have their borders of a lighter colour than their shells, and spotted with black ; this not being a constant character in all the young specimens, they may be regarded as a variety.

5. *Chiton granosus*.

*C. testâ oblongo-ovatâ, crassiusculâ, nigrescenti, fasciis duabus longitudinalibus, subcentralibus albidis: valvis duabus terminalibus (interdum radiatim) granosis; areis valvarum centralibus longitudinaliter striatis, lateralibus granoso-radiatis.*

Tab. Supp. XVII. f. 1.

Shell oblong ovate, thick, opaque, glossy, brownish black ; dorsal valves having a dirty white longitudinal band on each side of the beaks : inside blackish green. Valves eight ; anterior with numerous raised concentric granulations ; second valve acutely beaked, and finely carinated, the five following with a broad polished dorsal line : dorsal valves divided into three compartments, the front finely reticulated, the others with prominent granulations extending from the beaks to the lateral margins ; posterior valve granulated like the anterior. Border thick, rather broad, covered with dull black granula, divided into two parts.

Length  $1\frac{1}{4}$  inches, breadth  $1\frac{3}{16}$ . This new species is found plentifully at Valparaiso in the fissures of the rocks, but generally out of the reach of the breakers: the habits of this species are very different from those of the others which have come under my observation: like many *Patellæ* they are sometimes at such a distance from the water as would lead one to suppose that they pass some considerable part of their existence apart from it.

6. *Chiton glaucocinctus*.

C. testâ oblongo-ovatâ, lævissimâ, subrufâ, alternatim glaucosuscoque strigatâ; valvis, primâ et ultimâ, radiatis; margine carneo, fusco-maculato.

Tab. Supp. XVII. f. 2.

Shell oblong ovate, reddish, marked with alternate brown and greenish blue stripes. Valves eight, the first and last radiated; dorsal valves smooth, divided into two parts by a transverse ridge; posterior compartment grooved. Border broad, granulate, pink, with brown spots.

Length four-tenths of an inch, breadth one quarter. A solitary specimen of this elegant little shell was found at Valparaiso. I have however some doubts of its being adult.

7. *Chiton granulosus*.

C. testâ angustâ, minutissimè granulatâ, fusco-marmoratâ; dorso acutiusculo, elevato; valvis dorsalibus convexiusculis.

Tab. Supp. XVII. f. 3.

Shell narrow, granulated, granulations very fine, brown, marbled: back acute, elevated. Valves eight; dorsal valves a little convex, not divided into compartments. Border narrow, covered with rather coarse granula of the same colour as the shell.

Length five-twelfths of an inch, breadth one-fifth. Found attached to a *Calyptræa* in Conception Bay: very rare. The two specimens in my collection are, I believe, the only ones which have been noticed.

\*\*\*  
LIGAMENTO MARGINIS VILLOSO.8. *Chiton Peruvianus*.

C. testâ oblongo-ovatâ, minutissimè granuloso-striatâ; ligamento marginali confertim hirsuto; interstitiis valvarum pilosis.

Tab. Supp. XVII. f. 4.

Syn. *Chiton Peruvianus*, Lam. Hist. Nat. des. Anim. sans vert. VI. 1<sup>re</sup> part. p. 321. Encycl. Meth. pl. 163, f. 7. 8. *Icon pessima*.

Shell oblong-ovate, opaque, dirty yellowish green, or yellowish brown, inside white. Valves eight, thin, slightly elevated: posterior compartments of the dorsal valves a little raised and striated, with minute granulate striæ, and in like manner the other parts of the shell; under each valve is inserted a series of short black hairs, which lie on the back of the shell: Border narrow, coriaceous, thickly set with coarse black hairs. Length two inches, breadth one inch and a half. Found under stones at low water, on the shores of Valparaiso Bay.

A variety of this species occurs having the anterior valves much narrower than the posterior.

*C. Peruvianus*, Lam. An. sans vert. VI. p<sup>te</sup> 1<sup>re</sup> p. 321, figured in the Ency. Method. pl. 163. fig. 7 and 8, is perhaps another species belonging to this sub-division. It certainly cannot be intended for a representation of mine, as neither the description or figure agree with it. The character Lamarck assigns to *C. Peruvianus* "testâ substriatâ" is not at all applicable to mine, which is finely granulate: under these considerations I venture to give this as a new species.\*

\* The above observations naturally occur upon comparing this species with Lamarck's description, and the figures in Encycl. Meth. Having, however, taken an opportunity of examining the specimen of *C. Peruvianus* in Lamarck's own collection, I am enabled to state that it is certainly the same species, and in the author's absence I have ventured to cancel his new name. G. B. S.

## \*\*\*\*\* LIGAMENTO MARGINIS LÆVIGATO.

9. *Chiton disjunctus*.

C. testâ oblongo-ovatâ, semipellucidâ, politâ; valvarum marginibus anticis arcuatis, lateribus rotundatis; ligamento marginali lato, lævi, hyalino, coloribus variis marmorato, valvis interposito.

## Tab. Supp. XVII. f. 5.

Shell oblong-ovate; semipellucid, reddish brown, with green and straw coloured markings; inside white. Valves eight, smooth, glossy, anterior margins of the dorsal valves arcuate, and not covered by the superior valve, except at the beaks, which gives the valves a disjointed appearance; posterior slopes a little depressed. Border smooth, broad, hyaline, and when alive beautifully marbled with vivid red, green, and blue colours; extending up the back, and nearly separating the valves.

Length two inches and a half, breadth one and a half. This beautiful and rare shell was first noticed by Mr. Cumings at Valparaiso, who found it in company with *Chiton elegans*.

10. *Chiton elegans*.

C. testâ oblongo-ovatâ, anticé angustatâ, coloribus variis marmoratâ; arcis valvarum lateralibus minutissimè granulosis; ligamento marginali lato, tenui, coloribus vividis marmorato.

## Tab. Supp. XVII. f. 6.

Shell oblong ovate, anterior part narrower than the posterior, semi-pellucid, marbled, markings of various colours, generally dark brown, reddish brown, yellow, and sometimes green. Valves eight, beaked, the front valve with very fine excavated and raised dots; second valve longer than the others, and like them divided into three compartments, the front with fine granulate longitudinal striæ; the two lateral depressed; with numerous fine irregular granulations, and a few minute punctures; a rather broad and

smooth dorsal line continues itself along the middle valves, on each side of which are very fine striæ parallel to it. Border smooth, thin, semi-pellucid, marbled, colours very bright when alive.

Length  $1\frac{3}{4}$  inches, breadth  $1\frac{1}{10}$ . Common under stones and on the rocks at Valparaiso Bay, but is rarely found in exposed situations.

### 11. *Chiton lineolatus*.

C. testâ oblongo-ovatâ, anticè subattenuatâ, lævi, pallidè rufo-fulvâ, lineolis undulatis concentricis pictâ: areis valvarum lateralibus indistinctis, minutissimè punctulatis.

Tab. Supp. XVII. f. 7.

Shell oblong-ovate, rather tapering towards the anterior valve, light reddish brown, marked with undulated concentric lines of a dark brown colour; inside white, except the beaks, which are purple. Valves eight beaked, posterior divisions rather indistinct, very finely punctured and granulated, the fifth valve generally with a broad brown dorsal line.\*

Border cherry coloured, similar to the preceding. Length one inch and three quarters, breadth one inch; not quite so common as the last, but found in the same situations.

Considerable variation is observed in the markings of this species, some of them having the lines partially or wholly obscured.

The great affinity between this and the last species, leaves some doubt of the propriety of separating them. I shall, however, leave it for more experienced Conchologists to decide, whether the constant linear markings are sufficient to warrant a specific designation.

### 12. *Chiton Chilensis*.

C. testâ oblongo-ovatâ, anticè subattenuatâ, crassâ, lævi, opacâ, fuscâ; ligamento marginali coriaceo, lævi, crasso; valvâ anticâ posticâque semilunatis, leviter punctatis: valvis intermediis lineâ granulatâ ab apice ad angulum anticum decurrente.

\* Amongst upwards of 100 specimens, but two exceptions occurred.



Tab. Supp. XVII. f. 8.

Shell shaped much like the two preceding, opaque, thick, dark brown, smooth, dull: inside white, with pink markings on the first, second, and last valves. Valves eight, with longitudinal striæ, crossed by irregular concentric ridges. Anterior and posterior valves semi-lunate, slightly punctated; second valve sub-carinated, the front margin obtusely angled, lateral margins arcuate, and the posterior with a prominent beak, on each side of which diverges a rather elevated granulate ridge; the next five valves alike, bow shaped with a granulate ridge on each side. Border smooth, coriaceous, tough, thick, darker coloured than the shell, semi-pellucid, broad at the sides, and narrow at the extremities.

Length two inches and three quarters, breadth one inch and three quarters. Found in the crevices of the rocks and under stones very sparingly, at Valparaiso.

---

ATR. XX. *Description de cinq espèces de Lépidoptères Nocturnes, des Indes Orientales. Par M. ALEX. LEFEBVRE, Membre de la Société Linnéenne de Paris, Correspondant de l'Académie de Catane, &c.*

PENDANT mon séjour à Londres, Monsieur Vigors ayant eu l'extrême complaisance de me montrer toutes les nouvelles espèces de son cabinet Entomologique, et de me prier de décrire les cinq espèces suivantes, c'est avec le plus grand plaisir que je me suis rendu à son désir. Mon seul regret est d'avoir été obligé de rédiger aussi promptement ces descriptions, et d'avoir répondu aussi faiblement aux nombreuses amitiés qu'il s'est plu à me prodiguer.

Tous ces insectes furent, avec un grand nombre de tous les ordres, recueillis près de la ville de Madras (côte de Coromandel) par M. le Major Sale.

Plusieurs d'entre eux existent aussi dans la collection de la Compagnie des Indes, recueillis à Java, par les soins de M. le Docteur Horsfield ; ce qui prouverait qu'ils ne sont pas exclusives au continent Indien, comme on peut le croire primitivement : et ce savant, ayant déjà commencé à décrire toutes les espèces inédites qu'il a rapportées de cette Isle, j'ai eu soin de conserver à celles ci les noms sous lesquels il désire qu'elles fussent désignées.

Le travail de M. Horsfield sera d'autant plus important qu'ayant élevé presque tous les lépidoptères, la connaissance parfaite qu'il a de leurs larves le mettra à même de relever nombre d'erreurs commises dans leur classification jusqu'à ce jour, par l'ignorance entière ou l'on était à ce sujet, et de nous donner une histoire complète de ces insectes, qui nous manque, et que l'on attend avec impatience de la plume de cet habile observateur.

Les caractères génériques des Lépidoptères, surtout dans les nocturnes, présentent trop de dissemblance avec les nôtres pour que M. Horsfield puisse les faire tous entrer dans les sections qui existent. De nouvelles coupes, de nouveaux genres peut-être, sont à n'en pas douter nécessaires à établir. Comme ce n'est pas à moi qu'il appartient d'en juger et de les faire connoître, je me suis contenté pour ces cinq espèces d'indiquer la place qu'elles doivent le plus naturellement occuper en ce moment ; jusqu'à ce que les Entomologistes dont s'honorent les Sociétés Linnéenne et Zoologique de Londres aient fait connaître les genres auxquels elles doivent définitivement appartenir.

18 Mai, 1827.

## GASTROPACHA VISHNOU.

Ord. LEPID. (Latr.) Fam. NOCTURN. Trib. BOMB.

Gen. GASTROPACHA. Ochs.

(Envergure. 2 pouces et  $\frac{1}{2}$  au moins.)

Alis dentatis, feminae, utrinque luteo-flavis; anticis, ad basin griseo maculatis, puncto solitari albedo, nigro cincto, ab exteriori margine ad angulum externum, punctis fuscis; posticis, lineâ, serieque punctorum fuscorum transversalibus: fimbriâ violacâ.

Les ailes supérieures et inférieures sont de part et d'autre, dans la femelle, d'un jaune d'ocre, ou d'orpin dans certains individus.

Sur les supérieures, presque à leur origine, il y a une large tache d'un gris sale, irrégulière, posée sur le bord inférieur, et atteignant le point central. Elle est coupée perpendiculairement aux deux extrémités par une ligne étroite, couleur de rouille, dont celle du côté de la base présente une tache lunaire presque semblable à celle que forme le point central, et celle opposée est peu sentie et remonte jusqu'à la côte supérieure.

Au dessus de la tache basilaire, et immédiatement contre elle est le point central largement écrit, blanchâtre dans son milieu et bordé d'un cercle brun; et un peu en avant de lui est une légère ligne brune qui part de la côte supérieure pour se joindre à la tache basilaire.

Une série de points bruns, sinuée à son milieu, et dont les premières et les dernières sont plus senties, descend de l'angle externe jusqu'au milieu du bord inférieur sur lequel elle se prononce fortement.

Les lignes, la série de points, se répètent en dessous, et le point central y est senti par une tache obscure.

Sur les inférieures une ligne transverse, brune, sinueuse, et très sentie, part du milieu de la côte supérieure et s'arrête presque à leur centre. Au dessous d'elle, de l'angle anal jusqu'au bord supérieur, il y a également une série de points bruns, très sinuée, et dont ceux du centre sont peu visibles.

Leur dessous est pareil, mais en plus la ligne transverse est précédée d'une semblable qui lui est parallèle:

La frange est jaune extrêmement dentée et vivement coloriée de violet a son bord extérieur.

Tout le corps, les pattes, et les antennes sont du même ton que les ailes, et l'extrémité de l'abdomen est garnie d'une forte touffe de poils de même couleur.

Cet insecte au repos porte les ailes absolument comme tous ceux de son genre.

(Décrit d'après quatre individus femelles.)

#### BOMBYX BRAHMA.

Ord. LEPID. (Latr.) Fam. NOCTURN. Trib. BOMB.  
Gen. BOMBYX.

(Envergure 3 pouces au plus.)

*Alis integris, feminae, utrinque fulvo-rufis; anticis, ad basin puncto minuto albo, vittisque duabus cinereis, albido marginatis: margine exteriori, punctis obscurioribus, puncto solitari cinereo; fimbriâ albâ.*

Les ailes supérieures de la femelle sont en dessus d'un roux ferrugineux, parfois un peu blanchâtre.

A leur origine est un petit point blanc peu visible. Elles sont coupées transversalement près de leur base et vers leur milieu par deux bandes transverses, larges, parallèles, cendrées, et bordées intérieurement d'une demi teinte foncée, et extérieurement d'un trait blanchâtre.

Dans l'intervalle qui les sépare et qui est égale a leur largeur est le point central, petit, pâle et un peu arqué en dehors.

Au-delà de la seconde bande, vers le bord des ailes, entre deux series de points noirs, dont les premiers sont assez diffus, est une demi teinte blanchâtre qui part de l'angle inférieur et s'eteint en atteignant celui supérieur.

Les inférieures, plus pâles à leur origine, sont de même couleur que les supérieures.

Le dessous des ailes est d'un roux plus vif, surtout vers leur bord, et y présente faiblement deux légères lignes transverses, bordées de brun.

La frange est étroite, d'un brun pâle, et finement terminée de blanc.

Les antennes qui sont fortement ciliées et assez longues, la tête et le corselet, sont d'un roux cendré pareil à celui des bandes transverses des ailes supérieures : un trait fin et brun borde seulement les épaulettes à leur sommet.

Les palpes qui sont touffues, sont cendrées en dessus et d'un brun très vif en dessous ; et le dessous du corps ainsi que les pattes sont de cette dernière couleur.

(Décrit d'après trois individus femelles.)

### BOMBYX BUDDHA.

(Envergure 18 lignes environ.)

*Alis integris, maris, subflexuosis pallidé rufo-fuscis ; anticis, maculâ fusco-rubeâ, arcu ad medium albo-nitente margineque obscuriori.*

Les ailes supérieures du mâle sont en dessus d'un brun assez clair, et portent presque sur leur centre une large tache irrégulière, atteignant au bord supérieur, bi-échancrée a son côté externe, et sur le milieu de laquelle est un petit chevron blanc ouvert en dehors.

Elles sont largement bordées d'une bande plus foncée qui occupe environ les deux tiers de l'aile, est un peu sinueuse, et nettement découpée a sa partie interne. Elle offre deux séries marginales de petits points noirs dont la première se perd dans la teinte.

Les inférieures et le dessous des ailes sont d'un brun uni, seulement un peu plus foncé en dessous, ainsi que le corps.

La frange est de même teinte, très étroite, et un peu noire a son extrémité.

Tout le reste de l' insecte est du même brun.

Les antennes sont un peu plus pâles, et très panachées.

(Décrit d'après un individu mâle.)

#### BOMBYX SIVA.

(Envergure 2 pouces 9 lignes.)

*Alis integris, maris et fœminæ, brunneo-fulvis : anticis, puncto solitari minuto obscuroque ; lineâ albâ, sinuatâ, transversali, maculis tribus albis, anticâ ad basin, posticâ ad marginem externum, accentiformibus, tertiâ ad medium nitente : posticis pallidioribus, ad angulum ani paululum nigro signatis.*

Les ailes supérieures sont, dans le mâle et la femelle, d'un brun marron, plus foncé à leur bord supérieur et plus clair à leur extrémité.

Leur point central est très petit et d'un brun foncé. A leur origine on observe un point blanc, et un accent de même couleur au milieu de la côte supérieure sur laquelle il est appuyé, la pointe tournée en bas.

Plus loin, au tiers de l'aile, une ligne flexueuse, blanche, courbe en dedans, descend de la côte supérieure, sur laquelle elle se prononce fortement, en diminuant de teinte et de largeur jusqu'à une petite tache argentée un peu triangulaire qui occupe presque le centre de l'aile. Elle reparait ensuite, mais très faiblement jusqu' au milieu du bord inférieur, ou elle est immédiatement suivie d'une tache un peu plus vive que le fond de l'aile, et qui s'étend jusque sur la frange.

Les ailes inférieures sont presque blanches, leur extrémité seule est largement demi teinte d'un brun très pâle, leur angle anal présente sur la frange deux petites taches brunes.

Le dessous des supérieures et des inférieures est très pâle, presque blanc à leur origine, et vers leur extrémité. Sur une large onde d'un brun foncé, reparait la même ligne flexueuse blanche du dessus, qui semble continuer sur les inférieures jusqu'à leur angle anal.

La frange est fort étroite et de même couleur que le dessus.

La tête et le corselet sont gris, les épaulettes larges, vivement colorées de brun marron, et bordées de blanc.

L'abdomen, brun en dessous, est blanchâtre en dessus, et chacun de ses segments est bordé du même brun à leur sommet.

Les antennes sont blondes, courtes, et panachées dans le mâle, longues et ciliées dans la femelle.

Les palpes sont touffues et jaunes à leur extrémité.

(Décrit d'après quatre individus, dont un est mâle.)

### BOMBYX GANESA.

(Envergure 1 pouce  $\frac{1}{2}$ .)

*Alis integris, maris, rufis: anticis, maculis duabus obscurioribus, anticâ quadrangulari paululum margine superiori, posticâ oblongâ, ad medium arcu albonitenti inscriptâ; fasciis albis valde sinuatis transversaliter signatis; posticis utrinque albidis, ad angulum ani, nigro-signatis: ano barbatissimo.*

Les ailes supérieures du mâle sont en dessus d'un brun fauve, plus foncé à la base et dans toute la partie supérieure de l'aile, et portent une bande marginale de même couleur, luisante, et chatoyante un peu sur le verd.

Deux lignes très flexueuses, d'un blanc brillant, surtout dans celle postérieure, et largement prononcées à leur départ, parcourent l'aile presque parallèlement du bord supérieur à celui opposé. Elles forment, au deux tiers de l'aile, vers son extrémité, une large tache foncée, presque quadrangulaire, échancrée extérieurement, qui tient par un de ses côtés au bord supérieur et ne dépasse pas leur milieu. A cet endroit elle se lie par son angle interne à une seconde tache irrégulière, petite, oblongue, d'un ton beaucoup plus vif, et dirigée de l'angle inférieur à la côte supérieure; de son extrémité la plus près de la base, elle forme le point central, et celle extérieure est coupée par un petit arc blanc formé par la ligne blanche la plus près du bout de l'aile.

212 Prince of Musignano on a nondescript species of Grouse.

En dessous, ces ailes sont du même ton, la tache du dessus y est répétée, et une seule ligne blanche la borde extérieurement.

Les ailes inférieures tant en dessus qu'en dessous sont d'un blanc sale, plus obscur à leur bord, et à leur angle anal: le bout de l'aile ainsi que la frange sont de part et d'autre vivement tachées de noir. Une bande transverse, obscure, faiblement écrite, s'observe seulement en dessous.

La frange est étroite et assez pâle.

La tête et le corselet sont du même brun que le fond des ailes, et les épaulettes d'un brun marron, bordées de blanc.

Les antennes panachées, les palpes fort touffues, et les pattes, sont d'un ton plus foncé.

L'abdomen est entièrement du ton des ailes inférieures, et l'anus garni de poils très bruns visibles seulement en dessous, est recouvert en dessus par deux longs pinceaux, réunis, de poils obscurs vivement coloriés de brun marron à leur extrémité.

(Décrit sur deux individus mâles.)

---

ART. XXI. *Notice of a nondescript Species of Grouse, from North America.* By CHARLES LUCIAN BONA-PARTE, Prince of Musignano, M.A., Fell. Lync. Acad. Rome, For. Memb. Linn. Soc. Lond., Corr. Memb. Senk. Nat. Hist. Soc. Franc., &c.

REPEATED accounts of hunters and travellers have long since put beyond question the existence, in the western wilds of the United States territory, of a very large species of *Grouse*, analogous to the European *Tetrao urogallus*; which, however, not having fallen under the immediate inspection of any naturalist, could not be properly registered in systematic catalogues. Having had the good fortune to find a specimen of this most interesting species among the endless ornithological treasures, of which



Mr. Leadbeater is so liberal towards the lovers of science, I beg leave to introduce it in its proper place, as one of the chief ornaments of the North American Fauna.

Genus. TETRAO, L.

Sub-genus. TETRAO, Nob.

*Tetrao urophasianus*.—Head smooth: primaries unspotted: toes strongly pectinated: tail subcuneiform, of twenty narrow tapering feathers.

Male black? Female grey, mottled.

Inhabits the North Western countries beyond the Mississippi, especially on the Missouri.

Size of the *T. urogallus*, which species it represents in the New Continent.

---

ART. XXII. *A Synopsis of the Species of Saurian Reptiles, collected in India by Major-General HARDWICKE; By Major-General HARDWICKE, F.R. & L.S., and J. E. GRAY, F.G.S.*

THE Reptiles which are described in the following pages are part of the collection of animals, formed by Major-General Hardwicke while on duty in various parts of India, where he had them figured while alive, generally by native artists, so as to indicate their natural colours and habits.

Specimens of most of these Reptiles have been brought to this country, and on their being compared with the drawings, it was found that every scale must have been counted, and the length and breadth of every part taken by actual admeasurement. We have thus reason to place great reliance on the accuracy of the drawings of those species, of which specimens had not been brought home; so much so, as to induce us to indicate and de-

scribe them also, stating the fact, at the end of the description, of their being characterized from the drawing alone.

Hitherto only twenty-seven species of this kind of Reptiles have been described as inhabiting India. Of these, ten are found in this collection; many of the others rest only on the authority of Seba, whose errors in regard to locality are discovered every day; and to these have been added thirteen new species, containing amongst them six new types of form, which have hitherto not been found in any other country; indeed all the species here described are peculiar to India, except the Chameleon, the Monitor, and one of the Crocodiles, which are common to Africa. The latter species proves M. Cuvier's opinion on the subject of the geographical distribution of the Crocodiles to be erroneous; for that naturalist, to whom we are indebted for the unravelling of the species of this genus, appears to have thought that each species was peculiar to a distinct country. The specimens and drawings of this collection, however, clearly demonstrate that the common Crocodile hitherto regarded as peculiar to Africa, is also spread over the continent of India.

The genera are arranged according to the Synopsis of Genera published in the Annals of Philosophy, and in the Philosophical Magazine for June, 1827.

As it is the intention of the writers of the present article to publish figures, with detailed descriptions, of each of the unpublished and unfigured species, the observations of Zoologists on any of the subjects noticed in it, will be most thankfully received.

## ORDER. I. EMYDOSAURI.

### Fam. 1. CROCODILIDÆ.

#### Gen. 1. GAVIALIS, Opperl.

##### 1. *G. Gangeticus*.

Lacerta Crocodilus. *Edw. Phil. Trans.* xlix. 639.

Crocodilus. n. 40. *Gronov. Gazoph.* ii. p. 11.

———— longirostris. *Schneid. Amph.* 160.

———— Gangeticus. *Cuv. Ann. Mus.* x. 66.

*Lacerta Gangetica.* *Gmel. Syst. Nat.* p. 1057.

*Gaviala Gangetica.* *Fleming, Phil. Zool.* ii. 276.

*Gavialis Gangeticus.* *Geoffroy St. Hilaire, Mem. Mus. Hist. Nat. Par.* xii.

Icon. *Edw. Phil. Trans.* xlix. t. 19. *Faujas, Hist. de la Mont. St. Pierre.* t. 46—47. *Cuv. Ann. Mus.* x. t. 1. f. 2. 11. and *Oss. Foss.* t. 1. f. 2. 11. *Geoff. Mem. Mus.* xii.

There are two drawings of this species in the collection, the specimens represented in which have only two nuchal scales, as is the case in the specimen in the British Museum. M. Cuvier figures four.

Gen. 2. CROCODILUS.

1. *C. porosus.* *Schneid. Hist. Amph.* ii. 150.

*C. biporcatus.* *Cuv. Ann. Mus.* x. 48.

Icon. *Seba*, 1. t. 104. f. 12. good. *Cuv. Ann. Mus.* x. t. 1. f. 4. 13. 18. 19. t. 2. f. 8. head and nuchal scales.

Inhabits the Ganges, Penang, and Sumatra, common.

2. *C. Niloticus.* *Daud.* ii. 367.

*Croc. vulgaris.* *Cuv. Ann. Mus.* x. 40.

*Lacerta Crocodilus*, (pars), *Linn. Syst. Nat.* i. 359. 1.

Icon. *Geoff. Rept. d'Egypte.* t. 2. f. 1. and 1\*. very young. *Cuv. Ann. Mus.* x. t. 1. f. 5, 12. t. 2. f. 7. head and nuchal scales. *Geoffroy, Ann. Mus.* x. t. 4.

Inhabits the Ganges, and water tanks in the Carnatic.

In a drawing of a specimen eight feet long, from the Ganges, the nuchal scales are placed as in Cuvier's and Geoffroy's figures; but in a young specimen, from the water tanks at Madras, the lateral scales of the nuchal group are placed in the centre, opposite the division between the upper and lower series of scales. In a specimen about the same size in the British Museum, said to come from India, they are placed similarly to the latter; as is also the case with a full grown specimen in Mr. Gray's possession from Africa.

## ORDER II. SAURÆ.

Fam. 1. AGAMIDÆ.

Gen. 1. AGAMA.

\*. *Head almost uniformly scaly; back crested; tail compressed, with two or more series of long scales beneath.*

1. *A. superciliosa.*

Viridis, squamis uniformibus; supra dorsum tuberculis conicis raris brunneo-annulatis; superciliis elevatis carinatis; caudâ corpore duplo longiore, infrâ planâ, squamarum seriebus duabus.

*Lacerta superciliosa.* Linn. *Syst. Nat.* i. 360. 4.

Scutated Lizard. Shaw, *Zool.* iii. t. 68.

Lophyre à casque fourchu. *Lacerta Scutata.* Cuv. *Regne Anim.* ii. 36.—not Linn. i. 360. 5.

*Agama tigrina.* Merrem, *Rept.* i. 50. 4. but not Syn. which belong to *A. cristata.* Merrem. *Ib.* 50. 3.

*Lophyrus Gigas.* Boié, *Bull. Sci. Nat.* ix. 235.

*Agama gigantea.* Kuhl, *Beitr.* 106.

Icon. *Seba, Thesaurus,* i. t. 100. f. 2. Copied Shaw, *Zool.* iii. t. 68. low. fig.

Inhabits Bencoolen.

Length 12 inches; body  $4\frac{1}{2}$ ; tail  $7\frac{1}{2}$ .

Green; eyebrows elevated, keeled; tail nearly twice as long as the body, beneath flat, with two series of long slender double pointed keeled scales. Scales uniform, small, with a few scattered conical tubercles on the back, each surrounded by a brown ring; teeth recurved, cut in behind.

2. *A. armata.* n. s.

Pallida, brunneo-marmorata; squamis lanceolatis carinatis; spinis trihedris raris supra dorsum et membra; superciliis carinatis, squamarum serie lævi in spinam longam posticè desinente; dorso serie spinarum gracilium cristato; caudâ seriebus pluribus squamarum longarum tetragonarum.

Inhabits Singapore.

Length 12 inches; body  $5\frac{1}{2}$ ; tail  $6\frac{1}{2}$ .

Pale, marbled with black brown; scales lanceolate keeled, with some scattered trihedral spines on the back and upper parts of the legs. Eyebrows keeled, with a series of smooth scales ending behind in a long subulate spine; a tuft of three or four spines over each ear. Back crested with a series of long awl-shaped spines. Tail with several series of long quadrangular scales beneath; teeth conical erect.

\*\* *Head uniformly scaly; back crested; tail uniformly scaly.*

3. *A. vultuosa.* Harlan.

Viridis, infra pallidé brunnea; capitis et corporis squamis parvis lanceolatis uniformibus, caudæ et membrorum majoribus, abdominis latis carinatis; dorsi cristâ brevi simplici; membris longissimis gracilibus; caudâ corpore sesquilongiore.

*A. vultuosa.* Harlan, *Journ. Acad. N.S. Philad.* iv. 296.

Icon. Harlan, *Ibid.* t. 19. Bad, the legs very short.

Inhabits Penang, called *Girget*.

Length  $13\frac{1}{2}$  inches; body  $4\frac{1}{2}$ ; tail 9.

Green, below pale whitish brown; scales of the head and body small, lanceolate uniform; of the tail and limbs larger, and of the belly broad, keeled; crest of the back short, simple; legs very long, slender. Tail half as long again as the body.

4. *A. Indica.* n. s.

Pallidé virescens brunneo-marmorata, infra albida; capitis squamis parvis, corporis, membrorum, caudæque latis lanceolatis carinatis; parotidibus fasciculis duobus spinarum supra aures; cristâ spinarum simplicium compressarum ab occipite ad medium usque dorsum.

Inhabits Dumdum, common, *Gen. Hardwicke.* Java, Dr. Horsfield.

Length  $12\frac{1}{2}$  inches; body  $3\frac{1}{2}$ ; tail 9—10 inches.

Pale yellow green, marbled with brown; beneath whitish; scales of head small, of body tail and limbs broad lanceolate keeled; parotids with two bundles of spines above the ears; the

crest of simple compressed spines only extends from the occiput to the middle of the back; tail nearly three times as long as the body.

Called *Ghirgit* in Calcutta.

5. *A. minor*. n. s.

*Brunnea* obscuré marmorata, infra pallida; capite brevi; capitis caudæ membrorum abdominisque squamis ovatis obtusis; superciliis carinatis; supra aures fasciculis 2 spinarum; dorsi squamis latissimis, obtusé carinatis; cristâ per totum dorsum, vix elevatâ; caudâ corpore brevior.

Var. capite dorsoque asperioribus.

Inhabits Chittagong. Var. Mhendy Ghat. Sandy plains.

Length 6 inches; body  $3\frac{1}{2}$ ; tail  $2\frac{1}{2}$ .

Brown, marbled with darker, and lower parts pale; head short; scales of head, tail, limbs, and belly, ovate, blunt; eye-brows keeled, with two bunches of spines over the ears; scales of the back very broad, blunt, keeled; the dorsal crest scarcely raised, extending the length of the back. Tail two-thirds the length of the body. From a drawing.

The variety has the back and the head more spinous.

\*\*\* *Head uniformly scaly; back simple; tail uniformly scaly.*

6. *A. tuberculata*. n. s.

Viridis flavo marmorata et punctata; squamis parvis ovatis, caudæ et membrorum externé majoribus, carinatis; femoribus seriebus 3—4 tuberculorum conicorum; caudâ corpore duplo longiore, basi incrassatâ, apice attenuatâ.

Inhabits India.

Length 12 inches; body and head four; tail 8.

Green, marbled and speckled with yellow; scales small ovate, those of the tail and outer side of the limbs larger, keeled; hinder thighs, with three or four rows of conical tubercles behind; tail twice as long as the body, thick at the base, and tapering at the end; eyebrows keeled, smooth; teeth simple conical.

Gen. 2. DRACO. Linn.

1. *D. abbreviata*. n. s.

Squamis parvis; ad alarum marginem membrorumque posteriorum latera squamis ovalibus compressis ciliata; alis partim femoribus adnatis subtus maculatis; gulâ brevi, thoracem attingente.

Inhabits Singapore.

Length 12 inches; body 5; tail 7 inches.

Scales small, body on the edge of the wings and the sides of the hind legs fringed with compressed ovate scales; wings partly attached to the thighs, beneath spotted; the central pouch of the throat reaching to the thorax.

2. *D. 5 fasciata*. n. s.

Squamis parvis, caudæ paulo majoribus; membris posticis squamis ovatis compressis marginatis; alis fasciis quinque nigris cæruleo-marginatis; gulâ thoracem longé superante.

*Draco viridis*. Kuhl, Beitr. 102?

Body 4 inches; tail  $5\frac{1}{2}$  inches.

Scales small, those of the tail rather larger; hind legs edged with ovate compressed scales. Wings with five black bands, edged with blue. The central pouch of the throat reaching beyond the thorax.

3. *D. viridis*. Daud. Rept. iv. t. 41. good.

Pale, wings and body dotted, and marbled with black. Tail just twice as long as the body.

A drawing from an animal brought from Java.

Gen. 3. UROMASTIX.

1. *U. Hardwickii*. Gray, Mss.

Supra virescens nigro punctulata brunneoque marmorata; subtus pallidé brunnea; femoribus posticis maculâ nigrâ ad basin internum; squamis membrorum parvis, infra corpus majoribus; tibiarum spinis sparsis; caudâ supra annulis spinarum distinctis.

Inhabits the sandy plains of Kanouge, in Hindustan.

Greenish, punctulated with black, and marbled with brown

above; beneath pale brown, the thighs with a black spot on the base of the inner or front edge; scales small, those of the limbs and under side larger; hind legs with scattered, and the tail with distinct separate rings of spines on the upper surface; the outer spine on the edge of the tail the largest.

When old, the skin about the neck and shoulders becomes loose and folded.

Called by the Hindoos *Saara*: it is eaten by the lower castes.

2. *U. Belliana*. n. s.

Olivacea; dorso fasciis tribus longitudinalibus, cum seriebus quatuor macularum albarum nigro-marginatarum alternantibus; membris maculis albis ocellatis; lateribus nigro maculatis; squamis parvis, subtus paulo majoribus, caudæ parvis verticillatis.

Inhabits Penang.

Body 5, tail 9 inches.

Olive green; back with three pale black-edged longitudinal streaks, alternating with four rows of black-edged pale coloured spots; legs varied with pale black-edged spots, and the sides ornamented with square black spots; scales small, those of the lower parts rather larger, and those of the tail small and placed in verticillate bands; the bands of pores do not quite meet over the sub-anal region. From a drawing.

FAM. III. CHAMÆLEONIDÆ.

Gen. 1. CHAMÆLEO.

1. *C. vulgaris*.

Lacerta Chamæleon. *Linn. Syst. Nat.* i. 364. 20.

Lacerta caudâ tereti brevi. *Linn. Amæn. Acad.* i. 571.  
& i. 512.

Chamæleo vulgaris. *Latr. Rept.* 11. *Daud.* iv. 181.

Chamæleon trapu. *Geoff. Rept. d'Egypte.* ?

Caméléon ordinaire. *Cuv. Regn. An.* ii. 52.

Icon. *Seba.* i. t. 82. f. 2. dry.—f. 1. in spirits. (Copied  
*Ency. Meth.* t.—f. 2.) *Geoff. St. Hilaire, Rept.*  
*d'Egypte.* t. 4. f. 3.

Skeleton. *Seba.* t. 82. f. 8. Copied *Daud. Rept.* i. t.  
11. f. 1.



*Chamæleo Mexicanus.* Laur. Rept. 45.

*Lacerta chamæleon.* β. Gmel. Syst. Nat. i. 1069. 20.

*Chamæleon calcaratus.* Merrem, Rept. i. 162.

All from *Seba.* i. t. 82. f. 1. which has the slight expansion of the hinder part of the sole distorted into a distinct toe.

Perhaps also,

*Chamæleo Africanus.* Laur. Rept. 46.

*Lacerta Africana.* Gmel. Syst. Nat. i. 1069. 60.

*Chamæleon calcaratus* (pars). Merrem, Rept. i. 162. All established from *Seba,* i. t. 83. f. 4.

*Chamæleo Zealonicus.* Laur. Rept. 46.

*Chamæleon subcroceus.* Merrem, Rept. i. 162. Both from *Seba.* 1. t. 82. f. 3.

Inhabits Africa and India. "Egypt, Barbary, and South of Spain," Cuvier. Central Africa, Colonel Denham. India, Gen. Hardwicke. Tripoli, Mr. Ritchie. Egypt, Geoffroy.

This species, which is evidently the one originally described by Linnæus, is known by the peculiar pyramidal form of the occiput, by the single large irregular quadrangular flat space on the cheek, (which is double in *C. pumila*), and by the slightly crested denticulated white line from the chin to the vent. The teeth are rarely (as they are described to be by Cuvier) slightly 3-lobed, which is an anomaly in those Lizards which have them placed on the edge of the jaw. When the animal is alive and in health, the angles of the occipital pyramid and the lines on the side of the face are completely obliterated. It is distinguished from a species from Central Africa, by the occipital keel extending to the centre of the eye, by the back of the head being only slightly lobed, and by the frontal scales being tubercular.

#### Fam. IV. GECKOTIDÆ.

##### Gen. 1. PTEROPLEURA. n. g.

*Digitis palmatis ad basin usque dilatatis, squamis latis uniseriatis indivisis, ultimo articulo adunco libero, pollice mutico;*

*poris femoralibus nullis; corporis et membrorum lateribus fimbriatis.*

This genus can be confounded only with the *Uroplates* of Daudin, from which it may immediately be distinguished by the toes being completely webbed, by the scales of their under side being broader towards the extremities, and entire, and by the last joint, which bears the claw, being raised up and exposed, while in the *Uroplates* it is inclosed in the groove of the scales, and completely hid from view; indeed the formation of the toes is similar to that of the *Platydauctyles* and *Geckos*, but it differs from them in their being webbed, and in the membranes on the sides of the body, which appear to indicate very different habits.

1. *P. Horsfieldii*. n. s.

Supra pallidé fusca, nigro-fusco maculata; infra albida.

*Pteropleura Horsfieldii*. Gray, *Phil. Mag.* July, 1827.

Inhabits India. Singapore, *Gen. Hardwicke*. Java, *Dr. Horsfield*.

Head and body depressed; above pale brown, with irregular shaped dark spots, with a darker margin on each side of the body just above the lateral fringe, two round spots on the back of the neck, two sub-quadrangular larger spots over the shoulders, and four irregular wavy bands at nearly equal distance from one another; the scales of the upper part of the body are small and even, those of the upper side of the limbs and tail and lower part of the body are rather larger; the labial scales are very large, and the central one of the upper jaw is broad, and furnished with one large central and two smaller ones on its upper edge. The sides of the head, between the angle of the mouth and the ear, just behind the ear, the front and hinder edge of the fore legs, the side of the body, from the fore to the hind legs, the bend of the outer and the whole of the inner edge of the hind legs, are furnished with a membranaceous fringe, which is covered with rather large, broad, quadrangular scales, placed in cross bands on the upper side, naked and smooth beneath, except the fringe on the side of the head, which is covered with reticulated scales above, and smaller ones beneath. Tail depressed, edge slightly expanded.

Length of the animal 5 inches ; head 1 ; body 2 ; tail 2. The breadth of the expansion on each side of the body half an inch. It differs from the *Ptychozoon* of Kuhl, by not having any femoral pores.

Gen. 2. GECKO.

1. *G. verus*.

*Lacerta* Gecko. *Linn. Syst. Nat.* i. 365. 21.

Gecko *verus*. *Merrem, Rept.* i. 42. 12.

*Platydactylus*. *Cuv. Regne An.* ii. 45.

Icon. *Seba*, i. t. 108.

Gen. 3. HEMIDACTYLUS.

A drawing of a species of this genus, with its young, is in the collection ; but at present we do not venture to describe it.

Gen. 4. EUBLEPHARIS. n. g.

*Digitis* 5. 5. subæqualibus simplicibus conicis brevibus unguiculatis ; *poris subanalibus* distinctis ; *caudâ* cylindricâ, verticillatâ.

This genus is separated from the other genera of the simple toed Geckos, by being furnished with distinct subanal pores, and also by the form of the toes, which are very short and conical.

1. *E. Hardwickii*, n. s.

Supra fusca, fasciis quatuor albis ; dorsi squamis parvis subconicis ; infra albida.

*Eublepharis Hardwickii*. *Gray, Phil. Mag.* June, 1827.

Inhabits Chittagong, *Gen. Hardwicke*. Penang.

Blackish brown, above pale, under parts and limbs whitish, with a pale band from the lips, extending over the ears, and forming a horse-shoe over the back of the head ; another lunate band on the middle of the back, a transverse band over the hind legs, and one or two on the tail. The front of the head and lower part of the body and limbs are covered with small roundish flat

scales; the back and upper part of the limbs are protected with large oval scales, each slightly elevated in the centre, and separated from one another at the base by a series of minute granulated scales. The tail, which is round at the base and slightly compressed at the extremity, is covered with small irregular flat scales; and is narrowed at equal distances into 16—18 ring-like contractions, which are more visible in the centre, and gradually disappear at each end. Each of these bands is furnished with a series of large orbicular subconical scales on the edge. The labial scales, especially of the upper lip, are very long and narrow. The edge of the eye-lid is reflexed and expanded; femoral pores 8—9 on each side, in a triangular series; toes very short.

Length of the animal  $7\frac{1}{2}$  inches; of head and body 4 inches; tail  $3\frac{1}{2}$  inches.

Gen. 5: CYRTODACTYLUS. n. g.

*Digitis 5. 5. apice compressis, retroflexis dein incurvatis, unguiculatis; poris femoralibus nullis; caudâ cylindricâ.*

This genus belongs to that group of the family which differs from the type in the toes being destitute of those scales on the under side which enable them to climb on perpendicular surfaces; but it is known from the other genera of this section by the peculiar form of the toes, which are arched at the end, that is to say, the third joint is very short, and forms a right angle with the second; the fourth then goes off horizontally from it, and the joint bearing the claw is bent down at the end, so as to give the foot a very peculiar appearance.

1. *C. pulchellus*. n. s.

Supra pallidè fuscus, subaculeatus, fasciis purpureis duodecim latis; infra lævis, pallidus; superciliis denticulatis explanatis, internè purpureo-brunneis.

*C. pulchellus*. Gray, *Phil. Mag.* June, 1827.

Inhabits Penang.

The head is very much depressed, and smooth; the labial scales broad, short, quadrangular; the frontal ones of both jaws triangular, with two scales on their upper edge; eyes very large, the

lids expanded, plaited on the edge, and purple within; the back is minutely scaly, with numerous polished, round-based trihedral tubercles, of the colour of the part on which they are placed.

The scales of the chin are small and smooth; those of the abdomen larger, imbricate, circumscribed on the side of the body by a slightly crenulated raised edge of tubercles, and separated from the smaller scales of the hinder part of the thighs by a series of larger scales, which just occupies the place usually filled by the femoral pores; the lower surface of the tail is furnished with a central series of broad short scales.

The upper surface is pale brown, with a broad horse-shoe-shaped purple-brown band edged with white, passing from the back of each eye over the ear to the back of the head; a similar band extends over the shoulders, and then follow three rings of the same colour on the body, and seven on the tail.

Length of the body 3 inches; of head  $1\frac{1}{2}$ ; of tail — ?

Fam. V. VARANIDÆ.

Gen. 1. MONITOR.

The animals of this genus are aquatic; they have the tail above compressed and keeled, and beneath rounded, and the nostrils ovate, small, placed laterally, nearer the tip of the nose than the eye.

1. *M. elegans*.

*Tupinambis elegans*. *Daudin, Rept.?*

*Tupinambis bivittatus*. *Kuhl, Beitr.* 123. *Boié, Isis*, 1826. 1. 205.

Monitor élégant de l'Archipel des Indes. *Cuv. Regne Anim.* ii. 24.

Monitor de Java. *Cuv. Oss. Foss.* v. 288.

*Varanus elegans*. *Merrem, Rept.* 58.

Inhabits Cawnpore and Dheliah, near Futtehghur.

The nostrils are placed at less than half the distance from the tip of the nose to the eye; the head is plain olive, with two darker streaks over the ears, and some yellow bands on the front of the nose, by which it is to be distinguished from the African Monitor, *T. elegans*, Kuhl, well figured by Petiver (Gaz.t.15.f. 6.).

The number of bands of spots, and their size, appear to vary by age.

Called *Bis Kupra*, or *Bis Copra* at Cawnpore, and *Gosaump* at Dheliah.

2. *M. flavescens*. n. s.

Naribus rostri apici quam oculis propinquieribus; carinâ elevatâ utrinque supra dorsum; digitis validis brevibus subæqualibus; squamis magnis flavis brunneo-rufescente marmoratis; caudâ corpore duplo feré longiore.

Inhabits India.

Nostrils one-third the distance from the end of the nose to the angle of the eye. Body with a raised keel on each side of the back, just above the legs. Toes strong, short, nearly equal. Scales large, yellow, mottled with reddish-brown. Tail nearly twice as long as the body. Tail  $14\frac{1}{2}$ . Body 8 inches. There is another drawing, apparently of this species, with the body 13 and the tail 18 inches long. From a drawing.

Gen. 2. VARANUS.

Tail round and triangular. Nostrils an oblique slit, placed near the angle of the eye. Teeth sharp, compressed. Terrestrial.

1. *V. Scincus*.

Tupinambis griseus. *Daud. Rept.* viii. 362.

Monitor terrestre d'Egypte. *Cuv. Regn. Anim.* ii. 25.

Ouran de Forskal. *Geoff. Rept. d'Egypte*.

Varanus Scincus. *Merrem, Rept.* 59.

The Scincus of the Ancients, according to Prosper Alpinus.

Crocodile terrestre d'Herodote.—*Cuvier*.

Animal Lacertosum. *Prosper Alp. H. N. Ægypt.* 217.

Icon. *Prosper Alp. Ib.* t. 11. *Geoffroy, Rept. d'Egypte,*  
t. 3. f. 2.

Inhabits Futtehghur.

A drawing of this animal differs slightly from the specimen in the British Museum from Tripoly, collected by Mr. Ritchie, which agrees exactly with Geoffroy's figure in colour; the upper part of the body is pale, with three irregular-edged broad, and the belly with four narrow black, bands. The tail also is annulated.

ORDER III. SAUROPHIDII.

Fam. 1. SCINCIDÆ.

Gen. 1. TILIQUA.

The toes of this genus are simple, cylindrical, not fringed. Body fusiform, and the head covered with one rostral, one anterior and two posterior frontal, one anterior vertebral, two occipital, a posterior vertebral, and four posterior occipital shields.

1. *T. carinata*.

*Scincus carinatus*. *Schneid. Hist. Amph. ii. 183. Daud. Rept. iv. 304.*

Icon. ————— ?

Inhabits gardens, Dumdum.

A specimen preserved in spirits agrees well with Schneider's description of his second specimen. In a drawing of the species, the animal is represented as golden green on the back, with a golden yellow band commencing at the nose, and running over the eyebrow along the side of the body, a little behind the hind legs; the sides are purplish, darker above near the yellow streak; the scales of the upper parts are strongly ribbed, and those of the lower parts sexangular and polished.

There is a drawing of a *Scinc*, supposed by the natives to be the young of this species, which is pale golden green above and yellow beneath, with a pale whitish border and scattered black spots on each side, just over the legs.

2. *T. trivittata*. n. s.

Supra pallidè brunnea; dorso fasciis flavis tribus latis nigromarginatis; lateribus pallidis maculis nigris raris; subtus albida.

Inhabits gardens, Dumdum.

Length,  $8\frac{1}{2}$ ; Body,  $4\frac{1}{2}$ ; Tail, 4 inches.

Above pale yellowish-brown, with three broad yellow bands on the back edged with black; the bands are two series of scales broad, and have two series of scales between each of them, the yellow situated on the two inner halves of the two series, and the black occupying the other outer halves of the scales; sides paler, with a few black spots; beneath whitish; under the eye a black streak. The tail banded like the back, very nearly as long as the body; ears denticulated in front; toes rather short. From a drawing.

Is this the *S. trilineatus*, Schneid. ii. 202.? The scales of the tail are uniform.

Gen. 2. LYGOSOMA, n. g.

*Corpore caudâque longis cylindricis, caudâ parum attenuatâ, squamis paribus imbricatis tectâ; pedibus quatuor breviusculis, digitis 5. 5. inæqualibus unguiculatis; capite scutato; auribus depressis parum vero occultis.*

Body long, cylindrical. Tail long, cylindrical, slightly attenuated; equally covered with imbricate scales. Legs 4. rather short. Toes 5. 5. unequal, clawed. Head shielded. Tympanum of the ears sunk, but distinct.

Head with one rostral, one anterior and one posterior frontal, a large anterior and a small triangular posterior vertebral, and two oval occipital shields.

The animals of this genus are separated from the *Scincs* by the cylindrical form of their body and tail, and the shortness and weakness of their legs. They agree with them in the scales, number of toes, and in having a visible tympanum, which separates them from the *Anguis quadrupes* of Linnæus. They are separated from *Seps* by the form and number of their toes.

1. *L. serpens*.

*Corpore supra aureo-subfusco nitente, subtus albido, lineis nigris longitudinalibus multis; squamis hexagonis; caudæ cærulescentis lineis interruptis.*

*Lacerta serpens.* “*Bloch, Besch. Berl. Naturf. ii. 28.*”

*Gmel. Syst. Nat. 1078. 75. excl. syn. Linn.*

*Scincus brachypus (pars.) Schneid. Amph. ii. 192.*

*Seps pentadactylus (pars.) Daud. Rept. iv. 325.*

*Chalcide Serpentin. Latreille, Hist. Rept. ii. 87.*

*Icon. “ Bloch. Ibid. ii. t. 2.” Gmel.*

Inhabits India. Java, *Dr. Horsfield.*

Body, above shining golden brown, beneath whitish, with 16—18 longitudinal black lines, scales sexangular, with a line between each series. Tail bluish, with the lines interrupted. Length, 8 inches. Head to fore-legs,  $\frac{4}{4}$  inch; to hind-legs,  $2\frac{1}{2}$ . Tail,  $3\frac{1}{2}$  inches.



This may perhaps be the animal indicated by Boié, as *Seps multilineata*.

The *Scincus*, n. 43. Gronovius, Zooph. p. 11., an animal in the British Museum, figured by Seba, vol. ii. t. 12. f. 6., and the *Lacerta abdominalis* of Thunberg, appear to belong to this genus.

ART. XXIII. *A short account of a new species of Modiola, and of the animal inhabitants of two British Serpulae.*  
By the Rev. M. J. BERKELEY.

MODIOLA RHOMBEA.

(Tab. Supp. XVIII. fig. 1. magnitudine nat. et lente aucta)

Mod. testâ tenui, rhombêâ, gibbosâ, plicis transversis subcrenularis, posticè obscuris, costisque longitudinalibus; umbonibus prominulis incurvis.

A single specimen was dredged up at Weymouth, Aug. 1826, adhering by a Byssus to a large mass of slate. Length from the umbo to front margin, 2 lin.

SERPULA ARUNDO.

(Tab. Supp XVIII. fig. 2. lente bis aucta)

Serp. testâ solitariâ, vel fasciculatâ, primum repenti, costellis quatuor plus minusve obsoletis longitudinalibus, rugisque intermediis transversis; demum adscendente, transversim rugoso-striatâ.

Animal, corpore elongato, depressiusculo; posticè attenuato, segmentis sub-nouagenis, ultimis ciliatis, albido-flavescente, fasciâ longitudinali obscuriore; anticè, areâ dorsali oblongâ plumbeâ, lineâ centrali fusco-nigrescente inter duas lineas fuscas; subtus lineâ fuscâ inter duas fusco-nigrescentes; pallio crispato, utrinque incarnato, anticè virescente; fasciculis utrinque septem aureis, quarum anteriores confertiores; subter quemque fasciculum, pallio maculâ coccineâ insigni; branchiis duabus terminalibus, flabel-latis; digitationibus pennaceis numerosis coccineis, fasciis punctisque concoloribus vel albis; operculo nullo.

Serpula Arundo. Tart. Conch. Dict. p. 155.

Dredged up at Weymouth.

The shelly tube of this *Serpula* is so variable, that it is difficult to assign characters by which it may be recognised, without the assistance of the animal. I have some specimens before me, in which there are four distinct keels, and intermediate transverse rugæ; which might be taken for a distinct species. Others have the keels less evident, but still discernible, with the rugæ faint, while others have the keels quite obsolete with the rugæ very distinct. Having taken the shell myself, in all its different stages of growth, I can safely say that the specimens before me are but varieties of one species.\* When the shell becomes free the keels are totally lost, and it may be known from *Serpula tubularia* by its more slender form and delicate substance; neither is the aperture expanded, as in *S. tubularia*. The animal differs from that of *S. tubularia* in its oblong dorsal area, while that of the latter is much attenuated behind; and in the absence of the operculum.

This may possibly be the shell figured in Rumph. Mus. t. 41. fig. 3. and Mart. 1. t. 2. fig. 12. A. as well as the *Serpula protensa* Lam. An. sans vert. Vol. 5. p. 364. which is said to be found in the Mediterranean, but it is not safe to make any positive assertion without specimens.

#### SERPULA FILOGRANA.

(Tab. Supp. XVIII. fig. 3. lente pluries aucta)

Serp. testâ nitidiusculâ filiformi, fasciculatâ; fasciculis cancellato-ramosis fastigiatis.

Animal, corpore valde compresso; posticè, segmentis latiusculis, subtricens, ultimis ciliatis, utrinque papillis duabus minimis, nigris, insignibus, pallidè carneo, fasciâ longitudinali obscuriore; anticè areâ dorsali oblongâ purpurascente fasciâ longitudinali rufescente: pallio planiusculo, albo; fasciculis utrinque septem, quorum anteriores confertiores. Membranâ terminali branchiarum ciliis octo pennaceis corneis quorum duo media operculum subinfundibuliforme, obliquè truncatum, ferunt.

\* May not the shell noticed by Dr. Turton in the Zool. Journal, Vol. ii. p. 567. under the name of *Vermilia scabra*, be identical with the strongly marked variety.

Filograna. Planc. Conch. p. 46 & 113. App. t. 19.  
fig. A. B.

Seba. Vol. 3. p. 10. fig. 8 & 19. a.

Serpula Filograna. Linn. Syst. Nat. p. 1265.

Gmel. 3741.

Serpula complexa. Turt. Conch. Dict. p. 153.

Dredged up at Weymouth.

According to the principles on which Lamarck has founded his genera, the two animals described above would form fit subjects for two new genera. I have however thought it more prudent to leave both for the present in *Serpula*, till more be known of the foreign species. *Serpula tubularia*\* and *triquetra* are by Lamarck referred to two different genera, on account of the testaceous operculum of the latter. There is no other difference in the animals, and I have seen the operculum with nothing more than a mere film of shelly matter, so as not to appear obviously testaceous without accurate examination. The dentate aperture affords no good character; for *S. tubularia*, in its young state, is furnished with a strong keel; and on this account Montagu confounded it with *S. triquetra*, and has therefore quoted the synonym of Ellis for the latter species; but in the Supplement, he describes the real *triquetra* as distinct, having found that its animal did not accord with his former observation, being provided with a shelly operculum.

---

ART. XXIV. *On the Bos Gour of India.* By Major-Gen. T. HARDWICKE, F.R., & L.S., &c.

IN the Edinburgh Philosophical Journal, No. 22, for October, 1824, is given a very interesting account of this new species of the *bovine* genus, from the pen of Dr. Thomas S. Trail; and as no drawing of the animal has yet been given to the public, to my knowledge, I am induced to offer to the Zoological Journal, for

\* Described in Lamarck under the name of *S. vermicularis*. The real *vermicularis*, which has a double striated operculum, is his variety.

publication, a figure taken from a pair of horns\* of the *Gour*, killed I believe by the same hunting party described by Capt. Rogers, and presented to me by the principal member of that party, the late Major Roughsedge.

It will be found on inspection of the horns, and by comparison with those of the *Gayāl*, that the difference of structure is strongly marked; and tends to establish the non affinity of species between the *Gour* and the *Gayāl*.

Of the *Gayāl* (*Bos Gayæus*) of Colebrooke, 8th vol. Asiatic Researches, there appears to be more than one species. The provinces of Chattgong and Sylhet produce the wild, or as the natives term it, the *Asseel Gayāl*,† and the domesticated one. The former is considered an untameable animal, extremely fierce, and not to be taken alive. It rarely quits the mountainous tract of the S.E. frontier, and never mixes with the *Gobbah*, or *Village Gayāl* of the Plains. I succeeded in obtaining the skin, with the head of the *Asseel Gayāl*, which is deposited in the museum of the Hon. the East India Company, in Leadenhall Street, and from which the drawing was taken, which accompanies that of the horns of the *Gour*.

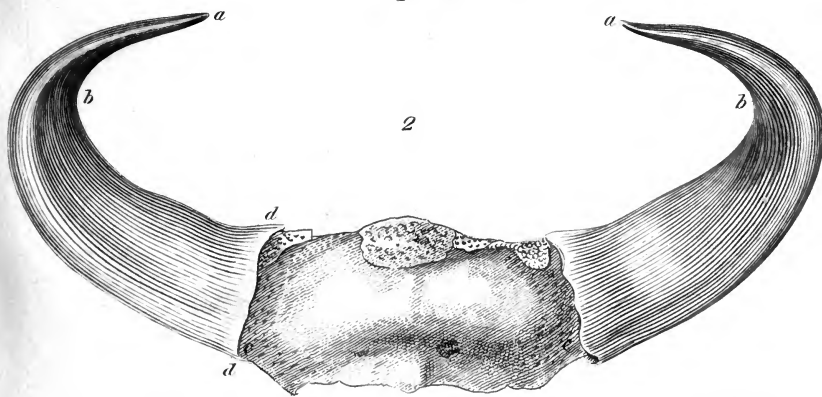
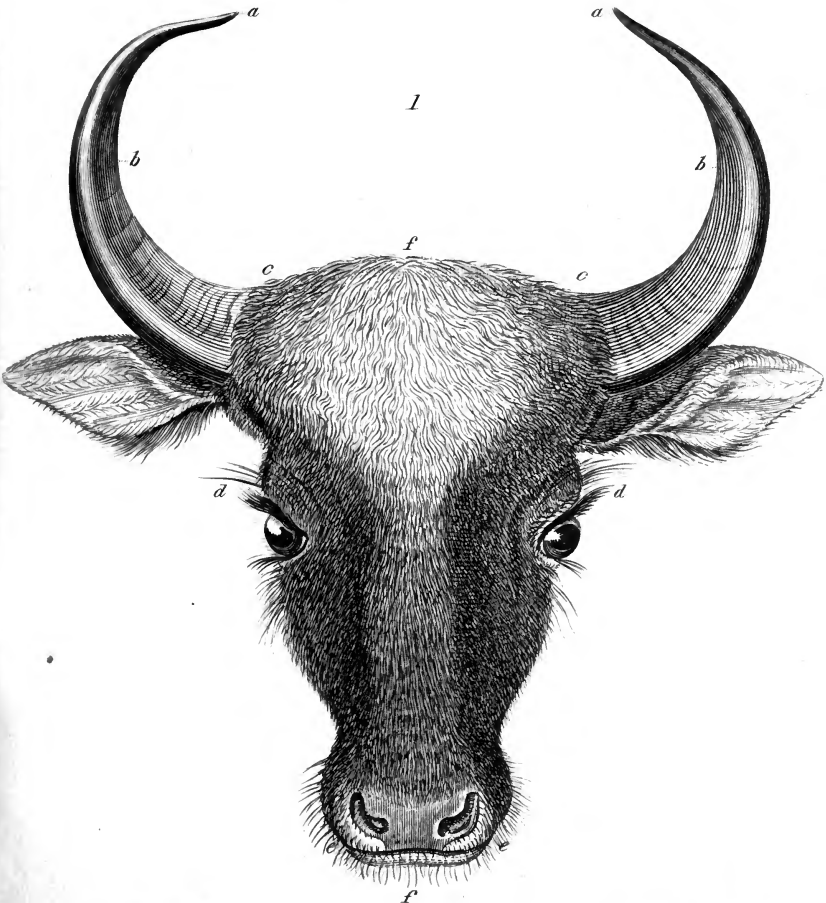
I may notice another species of *Gayāl*, of which a male and female were in the Governor-General's park, at Barrackpore. This species differs in some particulars from the domesticated *Gayāl*, and also from the *Asseel* or true *Gayāl*: first, in size, being a larger animal than the domestic one; secondly, in the largeness of the dewlap, which is deeper and more undulated than in either the wild or tame species; and thirdly, in the size and form of the horns.

#### EXPLANATION OF THE PLATE AND DIMENSIONS OF THE ANIMALS.

Pl. VII. Fig. 2. *Bos Gour*, or Wild Bull, of the Mountainous District of Ramgurh, and Table-land of Sirgoojas.

\* These horns may be inspected in the museum of the Zoological Society, to which they have been presented by General Hardwicke, together with many other valuable subjects of Indian Zoology.—ED.

† *True Gayāl*. The natives make a great distinction between the wild and the domesticated *Gayāl*.



Scale of  $1\frac{1}{4}$  inch to a Foot





DIMENSIONS.

- a* to *a* between the tips 15 inches.
- b* to *b* greatest diameter of the curve 25 inches, 3 inches below the tips.
- c* to *c* greatest breadth of the forehead  $12\frac{1}{2}$  inches.
- d* to *d* circumference of the horn at the base  $13\frac{1}{2}$ , another specimen measures  $15\frac{1}{2}$  inches.

From the base of the horn to the tip round the outer curve, 26 inches; another ditto 28.

Fig. 1. The true or "Asseel Gayāl" (*Bos Gayæus*) of the S.E. Frontier of Bengal, drawn from a female subject recently killed.

DIMENSIONS.

- a* to *a* space between the points of the horns, 14 inches.
- b* to *b* ditto five inches lower,  $21\frac{1}{2}$  ditto.
- c* to *c* breadth of the forehead, 12 ditto.
- d* to *d* ditto across the eyes  $11\frac{1}{2}$ .
- e* to *e* ditto across the muzzle, 5 ditto.
- f* to *f* length of the head, 22 ditto. Length of horn round the outer curve, 21 ditto. Circumference of ditto at the base,  $10\frac{1}{2}$  ditto. Length of ears, 9 ditto.

General Dimensions of the *Asseel Gayāl*.

	in.	ft.	in.
Head—length from nose to occiput . . . . .	22	} . .	8 7
Body—ditto from occiput to root of the tail . . . . .	81		
„ length of tail . . . . .	28		2 4
„ height from the hoof to shoulder . . . . .	62		5 2
„ ditto ditto to rump . . . . .	48		4 0
„ greatest circumference of the abdomen . . . . .	77		6 5
„ length of ears . . . . .	—		0 9

Maize Hill, Greenwich,  
27th March, 1827.

ART. XXV. *Description of a Fossil Volute from St. Peter's Mountain, near Maestricht.* By W. J. BRODERIP, Esq., Sec. G. S., F. L. S., &c.

VOLUTA ANTIQUA.

V. testâ ovato-fusiformi, costis magnis, longitudinalibus, elevatis; spirâ mediocri; columellâ 4 plicatâ.

Fossilis in Monte Sancti Petri, juxta Trajectum ad Mosam.

Icon. Tab. supp. xix.

Mus. Hoeninghaus., nost.

Shell ovate-fusiform, with large elevated longitudinal ribs; spire moderate; pillar 4 plaited.

Fossil in St. Peter's Mountain, near Maestricht.

Faujas-Saint-Fond, who has described and figured many of the fossils of St. Peter's mountain, has been censured by very great authorities, for inaccuracy, and even ignorance. That he has made many mistakes (such as describing the bony parts of fossil turtles for the horns of stags or elks) is true: but those who censure such errors as these, and even some of graver character, should remember that the position of geology when Faujas-Saint-Fond wrote, was far, very far behind the rapid advance which this science has made of late years, aided by the new lights, which an increased knowledge of Zoology has thrown on its path.

Among the fossils of St. Peter's mountain, there is figured\* the cast of a large turbinated shell, to which is given the name of "*Buccinite siliceux*." Through the kindness of Mr. Hoeninghaus of Crefeld, I am enabled to state my opinion that the cast in question is the cast of a *Voluta*. That gentleman has, most liberally, presented me with several specimens, some of which I have sacrificed to this inquiry; and, if, among these specimens, there had not been one of the shell itself, I am not at all prepared to say that I could have pronounced the others to be casts of a

\* Histoire Naturelle de la montagne de Saint-Pierre, de Maestricht, par B. Faujas-Saint-Fond. Pl. xx. fig. a, b.



species of *Volute*. These last have scarcely any trace of the longitudinal elevated ribs on the back, but they become visible on the under part, and on parts of the spire. Upon examining the interior, the impressions of the ribs and of the plaits of the pillar are distinctly seen.

The recent shell which approaches nearest to this fossil appears to be the *V. tuberculata* of Swainson. The specimen from which the figure in "Exotic Conchology" was taken, is the only one I have seen, and is now in my possession.

ART. XXVI. *Descriptions of a new Species of Anolius, and a new Species of Amphibæna; collected by W. S. MACLEAY, Esq. in the Island of Cuba. By THOMAS BELL, Esq., F.L.S., F.G.S. &c.*

Genus ANOLIUS. Cuv.

RHODOLEMUS. *A. vertice concavo, scutellis elevatis tecto; paleari roseo.*

Habitat in Ins. Cubâ.

Tab. Supp. XX. f. 1.

*Description.* Head large, triangular above, and covered with rough elevated brown scales, the edges ridged with more prominent ones of a yellowish colour, a continuation of which also surrounds the superior ridge of the orbit. Scales of the lips smooth, broad, regular, and nearly equal. Trunk covered with moderate sized smooth scales, diminishing towards the belly, those on the gular pouch very minute. The scales of anterior part of the back and sides irregular in form, and distant from each other, becoming regularly square and close posteriorly. Dorsocaudal crest denticulate; the denticuli triangular, broader on the commencement of the tail, diminishing gradually towards the middle, where they disappear. General colour brown, changing to darker or lighter green, and in parts to light blue. A fold of the skin over the shoulders of a greenish yellow. The gular

pouch very large, and of a delicate pink colour. The proportions of the legs, feet, and toes, similar to those in other species of the genus.

Length of the head . . . . . 2 in.  
 ————— body . . . . . 4 —  
 ————— tail . . . . . 11 —

The remarkable character of the scales covering the upper part of the head, the variety and elegance of combination of colours, the size and delicacy of hue of the gular pouch renders this species a very interesting acquisition to this department of Zoology.

GENUS AMPHISBÆNA. Linn.

PUNCTATA. *A. rufescente-grisea, fusco punctata.*

Habitat in Ins. Cubâ.

Tab. Supp. XX. f. 2.

Long. Capitis, *iii lin.*—Corporis, *vii unc.*—Caudæ, *v lin.*

ART. XXVII. Notice of two Species of *Vespertilionidæ*, forwarded by W. S. MACLEAY, Esq. F.L.S., His Majesty's Commissioner of Arbitration at the Havana, &c., &c.; in a letter to the Editor of the *Zoological Journal*. By THOS. HORSFIELD, M.D., F.L.S., &c. &c.

MY DEAR SIR,

AMONG various objects of natural history,\* which have recently been forwarded from the Havana by W. S. MacLeay, Esq. are two species of *Vespertilionidæ*, of which I have the pleasure of sending you a concise account. Although they have already been indicated in late works of Natural History, it may perhaps be interesting to preserve a record of them in your Journal, as belonging to the Fauna of the Island of Cuba, which, as we know from the communications of Mr. MacLeay, is remarkable on account of the paucity of Mammiferous species which it contains.

\* The description of several birds from the same locality will appear in our next number. We regret that a pressure of matter prevents their appearance in the present.

One of these subjects belongs to the genus *Molossus*, and appears to have an extensive range, not only on the continent of America, but also on the West Indian Islands: the specific name of *velox* was assigned to it by its discoverer, with which it appears in M. Temminck's Monographs of *Mammalia*. The second belongs to the genus *Phyllostoma*; it was first noticed and concisely described by Dr. Leach in the Transactions of the Linnean Society; but as the specimens sent by Mr. MacLeay have arrived in excellent condition, preserved in spirits, I have thought that a more detailed notice, as well as a figure of a species, hitherto imperfectly known, would not be useless.

I have the honour to be,

My dear Sir,

Your faithful Servant,

THOS. HORSFIELD.

To N. A. Vigors, Esq., &c. &c. &c.

1. *MOLOSSUS VELOX*, Natterer.

*M. corpore supra saturate-fusco, infra canescente, pilis omnibus unicoloribus, membranâ antipedum nigrâ, plagâ pilorum fuscorum humero et antibrachio parallelâ, in gulâ fossulâ cylindricâ rimâ orbiculari cinctâ.*

Molosse véloce. *Dysopes velox*, Temm., *Monogr. de Mammal.* p. 234. pl. xxii. fig. 1.

Wings narrow, but comparatively of great length; tail enveloped by the interfemoral membrane to about one half of its length, slender; ears not much elevated above the head, but of considerable breadth, united on the forehead by a continuation of the lobes from each side. On the throat a siphon or cylindrical pouch, having a regularly circumscribed border. Muzzle from the nostrils to the lips covered with numerous, coarse, obtuse bristles, of equal length. Upper lips bounded by a delicate series of hairs. Hairy covering of a dark chesnut colour above, paler and greyish underneath. Fur short; the separate hairs

being of a uniform colour throughout. Axillary cavity of considerable depth and extent. Membrane of the flanks less covered above than underneath. An irregularly defined broad band of brownish hairs extends along the bones of the shoulder and arm above.

Entire length 3 inches and 6 lines; length of the tail, 1 inch  $4\frac{1}{2}$  lines.

This account, which agrees in substance with that given by M. Temminck, is founded on the examination of a specimen in good condition preserved in spirits. A careful comparison has been made with the figure given in the Monographs above mentioned, and as far as I am enabled to judge from one specimen, this species appears to agree in all particulars on the continent of America, and in the Island of Cuba. The front teeth are all perfect in the specimen: the two lower ones remain in their natural position, before the appendages of the canine teeth, and illustrate the character of the genus *Molossus*, as originally defined by M. Geoffroy de St. Hilaire: they are strictly "entassées au devant des canines, et terminées chacune, par deux petites pointes."

This species was discovered by M. Natterer in Brazil. M. Schreibers, director of the Museum at Vienna, communicated two specimens to M. Temminck, the loan of which he acknowledges with grateful sentiments, and from which it would appear that his description and drawings were made: he states that it has since been brought to Europe by other travellers.

## 2. PHYLLOSTOMA JAMAICENSE.

*Ph. capite subcompresso, naso ad latera pilis brevibus vestito, vexillo nasali inferiore anticé abbreviato, adnato, lobo marginali utrinque sulco solitario exarato; corpore robusto, supra canescente-fusco, subtus pallidiore, pilis subelongatis mollissimis.*

Tab. Supp. XXI.

*Artibeus Jamaicensis*, Leach, *Linn. Trans.* xiii. p. 75.

The peculiarities of this genus are stated with great clearness by Dr. Von Spix in his description of the animals discovered by

him in Brasil.\* They consist in a robust body ; a thick somewhat oblique or wedge-shaped head, terminated by an obtuse muzzle : a double nasal membrane, of which the superior portion is erect and acute, the lower broad and rounded, but less complicated than in *Rhinolophus* : the gape of the mouth is semicircular ; the lips are defined externally by a broad, regular, even margin, which is covered by closely disposed tubercles or warts ; internally they are surrounded by a narrow, cirrhatated or regularly fimbriated membrane, which appears to answer the purpose of a sieve or strainer. The ears are of moderate size but not united ; the interfemoral membrane is short, and deeply excavated : and there is no tail whatever. Dr. Von Spix, as well as M. Fred. Cuvier, (*Des Dents des Mammiferes, &c.*) separates the *Phyllostomes*, thus defined, from the *Vampires*, although they agree in many characters.

The species now under consideration was first described concisely by Dr. Leach, with the name of *Artibeus Jamaicensis* in the xiii<sup>th</sup> volume of the Transactions of the Linnean Society, from a specimen sent to him from Jamaica by a correspondent. The character assigned to it by Dr. Leach agrees essentially with that of *Phyllostoma*, which had been previously defined by M. Geoffroy de Saint Hilaire. I have preserved the specific name given to it by Dr. Leach, and through the kind assistance of Mr. John E. Gray of the British Museum, I have been enabled to compare the specimens sent by Mr. MacLeay from Cuba, with the individual from Jamaica, originally described by Dr. Leach, and to determine their identity.

The *Phyllostoma Jamaicense* has a robust body, which is covered both above and underneath with long silky hairs of a very soft texture ; the colour of the body and head above is gray, inclining to brown, but without any tincture of yellow or red ; underneath it is paler and blueish ; the hairs above are darker at their extremity, so that the fur appears of darker and lighter shades according to the position of the hairs, and underneath it has a silvery gloss on the surface. The wings, the interfemoral membrane, and the nasal appendages are nearly black. The ears are narrow, rounded, and somewhat lengthened. The nose is

\* See Zool. Journ. II. 125.

covered at the sides with a soft down, through which a few bristly hairs are scattered. The teeth agree in all points with the character given them in the generic description: of the four superior incisors the two lateral ones are smaller; the inferior incisors are uniform in size, and regularly disposed. The interfemoral membrane is deeply excavated. The toes are uniform in length and size, and have all the same direction: the claws are partially covered by stiff projecting bristles.

The character of the mouth and lips, as given by Dr. Von Spix in his generic description, applies closely to our species: the latter are surrounded with a regular series of warts, and the mouth is provided internally with a narrow, fimbriated, cribriform membrane. In many particulars the *Phyllostoma Jamaicense* agrees with the *Phyll. planirostrum* of Spix, figured on the xxxvith plate of the work above mentioned: but it is clearly distinguished by the structure and adhesion of the inferior portion of the nasal membrane, by the absence of warts on the sides of the nose, and by other particulars.

Our specimens have an expansion of the flying membrane, amounting to one foot and three inches: and the entire length, from the muzzle to the extremity of the interfemoral membrane, is four inches and ten lines.

ART. XXVIII. *Sketches in Ornithology, &c. &c.* By N. A. VIGORS, Esq., M.A., F.R.S. & L.S., Secretary of the Zoological Society, &c.

[Continued from Vol. ii. p. 483.]

ON THE GRAND VASA OF M. LE VAILLANT.

WERE I not assured of the general accuracy of M. Le Vaillant, and of his nice tact in the discrimination of species, I should feel inclined to consider his *grand Vasa* which he has figured in the 81st plate of his "Histoire des Perroquets," and the *petit Vasa* of which he has given a figure in the succeeding plate, as varieties of the same species. The general similarity which prevails be-

tween the two birds would at first sight authorise such a conclusion. The alleged difference between them is chiefly in their size; the former being one and twenty inches in length, the latter not exceeding fourteen inches, or according to M. Brisson and some other naturalists who appear to have seen the bird, being about the size of the *African grey Parrot* (*Psitt. erithacus*, Linn.). M. Le Vaillant affirms that the bill of the first species is more robust, in proportion to its size, than that of the second. He also points out some difference in the lighter shades that prevail over the dark plumage of each bird as it is held in different lights. And he states that the *grand Vasa* is a native of the South Eastern coast of Africa, while the *petit Vasa* is known to inhabit Madagascar. These however are differences which may easily be supposed to belong to varieties of the same species. That in size is certainly great; but not more so than is often found to exist between individuals of the same species; and the distance between the localities again is not greater than that which frequently separates the birds of many species of this family.

I have been led into the foregoing doubts upon this subject by the examination of a bird which seems in some degree to unite the characters of both the preceding species. It is a living specimen which forms one of the highest attractions in the collection of the Zoological Society,\* and is at this moment in the most perfect condition for examination. It accords very accurately with the general appearance of both species as represented in the plates of M. Le Vaillant, and characterized in his descriptions; having the prevailing colour of a sooty black, with a lighter shade of greyish-slate passing over it as the bird is held in a strong light. A tint of green, it must be added, sometimes prevails over all these shades, which has not been noticed by M. Le Vaillant. The length of the bird is eighteen inches, in which point it is nearly intermediate between both species. In its bill which is stout and much rounded at the *culmen*, it seems to agree most nearly with

\*The bird was most kindly presented to the Zoological Society by Mrs. David Barclay, who had received it from William Telfair, Esq. an active and highly scientific naturalist now resident in the Island of Madagascar.

M. Le Vaillant's description of the *grand Vasa*, while its *habitat* on the other hand is the same as that of the *petit Vasa*.

Notwithstanding however we may suggest these doubts, we have not materials in this country for solving them. There is no example at present of the *grand Vasa* to which we can refer in any of our Museums; and we are equally at a loss respecting the lesser species. The only specimen of this bird which I can trace as having reached this country since the days of Mr. Edwards, who figured it in the fifth plate of his *Natural History of Birds*, was in the very valuable collection of Mr. Bullock, at the sale of which in 1819 it was purchased for a Parisian Museum. Whatever therefore may be our doubts as to the diversity of these species, we are bound to keep them distinct, until they are proved to be the same. And as, on taking a general estimate of the characters of our bird, they seem to preponderate in favour of the larger species of M. Le Vaillant, I shall consider it to belong to that species, or the *Psittacus Vasa* of Dr. Shaw.

My object however in noticing this bird is not so much to decide the species, as to point out the generick group, to which it belongs. Much confusion has hitherto prevailed as to its affinities, and those of the *petit Vasa*, (*Psitt. niger*, Linn.), which, if not the same species, certainly, as I shall point out hereafter from M. Le Vaillant's description, belongs to the same group. M. Brisson places the latter bird among those species of the *Parrots* which he distinguishes by an even tail. Linnæus placed it in the same situation, next in affinity to the well known *Psitt. leucocephalus*, which approaches nearly to the type of the true *Parrots*. At the same time he did not pass over without notice the different structure of its tail, having dwelt both in his specifick definition and in the subsequent description upon the "cauda longa sed æqualis." Dr. Shaw, who first scientifically named the larger species after M. Le Vaillant's description, ranges it and the *petit Vasa* in the midst of the true *Parrots*. And Dr. Latham assigns them a situation among the even-tailed birds of this family immediately between the *Cockatoos* and the last mentioned group. M. Le Vaillant himself equally considers these birds as belonging to the even-tailed *Parrots*; but he judiciously arranges them before that group, observing



that they form a distinct section among them in consequence of the length of their tail. It is also to be noticed that he places them immediately after the *Perruche à large queue*, (*Platycercus flaviventris*), to which species they bear a close affinity, as will subsequently appear. It is due to the late M. Kuhl to state that he first ranked these birds in their natural station. That gentleman, who, even in his slight sketch of the *Parrots*, had given a sufficient promise of his future reputation as a naturalist to cause us deeply to lament his premature loss to science, withdrew the two species from their doubtful station, and placed them according to their decided affinities among the *Perruches à large queue*.

A single glance at the living bird now in our possession at once confirms the justice of this arrangement. Its light and active movements originating from superiour powers of foot and *tarsi*, totally distinct from the embarrassed gait and feebleness of limb that characterize the typical *Parrots*, immediately call to mind the *Ground Parrakeets* of New Holland. It has been the subject of general observation among the visitors of the Zoological Museum, how much it resembles in these particulars many of those Australian species which have of late become familiar to us in their living state; such as the *King's*, the *Rose Hill*, the *Pennantian*, and the *Macquarrie Parrakeets*.\* Upon a minute examination also of its characters, it is found to accord exactly with these birds and the whole of the group of *Platycercus* lately characterized as belonging to Australia; having the broad *culmen* to the bill, the short and rounded wing, and the comparatively lengthened *tarsi* that distinguish that genus. From its geographical position it forms an important addition to the group, which is thus found to extend from some of the remoter Australian Islands to those Islands which border upon Africa. The immediate affinity of the bird is with the *Plat. scapulatus* (*King's Parrakeet*), which it resembles in the nearly even tail. And here it may be observed that those species of the group which inhabit the remoter islands, such as *Plat. Pacificus*, (*Macquarrie Parrakeet*), and its congeners, have their tails strongly graduated; some species again of

\* *Plat. scapulatus*, *eximius*, *Pennantii*, and *Pacificus*.

the continent of New Holland, such as *Plat. Brownii*, *Baueri*, &c., immediately connected with the foregoing, have tails which partially desert the cuneated form; while others, as *Plat. scapulatus*, *erythropterus*, &c., with tails becoming nearly even, in conjunction with the Madagascar bird now before us, beautifully unite the whole group with the *Parrots* of continental Africa, in which the even tail predominates. Although I deviate in some measure from our immediate subject, I can not avoid noticing the connection which the same Australian group has on the other side with the Continent of India, through means of the *Palæornis Barrabandi*. This New Holland species, with its comparatively elongated *tarsi*, brings those ground *Parrakeets* of Australia, which have lengthened and cuneated tails, into immediate contact with the Indian group of *Palæornis*. The continued chain of geographical affinities which unites this division of the *Parrots* is singularly conspicuous and beautiful.

With this addition to the genus *Platycercus*, the group is composed of the following fifteen species which may be referred to in the different Museums of this Metropolis. To these *Psitt. niger*, Linn., may be added, and most probably also *Psitt. Mascarinus*, Linn., which belongs to the same locality, and appears, as far as can be judged from a figure and description, to possess the same characters.

\* *Caudâ subæquali.*

1. PLAT. VASA. *Le Vaill., Hist. des Perr. pl. 81.*  
In Vivario Societatis Zoologicæ.
2. PLAT. SCAPULATUS. *Linn. Trans., Vol. XV. p. 284.*  
In Mus. Soc. Zoologicæ, multisque aliis.
3. PLAT. ERYTHROPTERUS. *Linn. Trans., Vol. XV. p. 284.*  
In Mus. Soc. Linnæanæ.
4. PLAT. PENNANTII. *Linn. Trans., Vol. XV. p. 280.*  
In Mus. Soc. Zoologicæ, aliisque.
5. PLAT. FLAVIVENTRIS. *Linn. Trans., Vol. XV. p. 281.*  
In Mus. Societatum Linn. et Zool.
6. PLAT. EXIMIUS. *Linn. Trans., Vol. XV. p. 281.*  
In Mus. Soc. Zoologicæ, aliisque.

\*\* *Caudá subgradatá.*

7. PLAT. TABUENSIS. *Zool. Journ.*, Vol. II. p. 549.  
In Mus. Dom. Leadbeateri.
8. PLAT. BROWNII. *Linn. Trans.*, Vol. XV. p. 281.  
In Mus. Societatis Linnæanæ.
9. PLAT. BAUERI. *Linn. Trans.*, Vol. XV. p. 283.  
In Mus. Soc. Linnæanæ.
10. PLAT. BARNARDI. *Linn. Trans.*, Vol. XV. p. 283.  
In Mus. Soc. Linnæanæ.
11. PLAT. MULTICOLOR. *Linn. Trans.*, Vol. XV. p. 283,  
In Mus. Soc. Linnæanæ.

\*\*\* *Caudá gradatá.*

12. PLAT. CORNUTUS, *Zool. Journ.*, Vol. I. p. 523.  
In Mus. Britannico.
13. PLAT. ULIETANUS. *Zool. Journ.*, Vol. I. p. 533. *Supp.*  
*pl. III.*  
In Mus. Britannico.
14. PLAT. AURICEPS. *Zool. Journ.*, Vol. I. p. 531. *Supp.*  
*pl. II.*  
In Mus. Britannico.
15. PLAT. PACIFICUS. *Zool. Journ.*, Vol. I. p. 529. *Supp.*  
*pl. 1.*  
In Mus. Britannico, Soc. Zoologicæ, aliisque.

M. Le Vaillant, in his description of the *petit Vasu*, a living specimen of which he had ten years in his possession, particularly dwells upon the ease and activity of its movements; a character, which at once points out its union with this group. He contrasts these active powers with the awkward movements of other *Parrots*, "qui tous generalement sont d'une gaucherie, et d'une lourderie qui semble leur être propres." His own bird, he says, on the contrary, "a les mouvemens vifs et degagés: toutes ses attitudes ont une grace merveilleuse." Its manners he describes as peculiarly mild and gentle; it was never known to bite any person; and

nothing could exceed its attachment, or the marks of its attention, to its owners. It was an excellent mimick ; readily repeating any tunes or sounds which it chanced to hear.

In these powers of voice our bird appears deficient. As yet I have heard no sound from it unless once or twice a loud and somewhat discordant shriek which it uttered when apparently in more than usually high spirits. In other respects its manners are similar to those of M. Le Vaillant's bird. It is gentle and tractable, although somewhat timid. It seems much pleased by attention being paid to it ; and is fond of being handled, particularly about the head. At such times it plays with the hand which caresses it, without any injury from its bill. Indeed I have observed in all the living birds of the present group which have come under my observation, that their bill has not the power of inflicting that severe wound which is given by the *Parrots* more nearly typical in the family. The strength of this member decreases as the lower mandible becomes straiter and more lengthened.

[To be continued.]

ART. XXIX. *Notice of a new genus of Mammalia, found in Sumatra by Sir T. Stamford Raffles. By THOS. HORSFIELD, M.D., F.L.S., &c., and N. A. VIGORS, Esq., M.A., F.R.S., and L.S., &c.*

IN the thirteenth volume of the Linnean Transactions an animal was described by the late lamented Sir T. S. Raffles, which he had acquired among his extensive Zoological collections in Sumatra. A preserved specimen of the species, according most accurately with his description, except in size, the difference in which seemed to originate in the difference of age, the specimen being apparently that of a young animal, was discovered among the numerous and valuable subjects with which he enriched the Museum of the Zoological Society. The specimen was in such fine preservation, and the species on many accounts of so extreme

an interest, that we caused a plate of it to be engraved for the Journal. Since we first examined this animal, we have been fortunate enough to discover, in the same collection, an adult specimen, that had been preserved in spirits. We are thus enabled to give a perfect description of the species, and at the same time, having all the materials complete before us, to characterize the group to which it belongs, and which appears to us very distinct from any hitherto described.

Sir Stamford Raffles referred the species to a Linnean genus, proposing for it the specifick name of *gymnura*. Although however he did not nominally raise it to the importance of a genus, he gave so clear and accurate a description of its generick characters, that we do not hesitate in attributing the first indication of the group to him. We shall consequently adopt his specifick name as generick, and give the characters as he himself described them, entering only with more minuteness into the details. The accompanying plate exhibits the younger specimen, which is in much finer condition for representation than the adult, and equally indicative of the species. In a future number of the Journal we shall give the head and system of dentition of the adult, and hope at the same time to be able to add some details of its internal economy.

#### Genus. GYMNURA, Raffles.

*Incisores* supra 2, remoti, maximi, subcylindrici, apice rotundato; infra 6, quatuor intermedii approximati, breviusculi, proclives, compressi, paginâ anteriori convexâ, interiori planâ, scalpro rotundato, duo laterales abbreviati, acuti. *Laniarii* supra utrinsecus 2, ab incisoribus remoti illisque breviores, conici, antichi majores; infra utrinsecus 1, maximus, conicus, subarcuatus introrsum spectans. *Molares* supra utrinsecus 8, a laniariis remoti, tres antichi unicuspides, primus elongatus sectorius, secundus et tertius abbreviati, quartus cuspidem conicâ elongatâ, ad basin gradu postico et exteriori abbreviato, quintus cuspidem exteriori longissimâ interiori abbreviatâ; sextus et septimus maximi, multicuspides, cuspidibus subabbreviatis rotundatis, octavus minor subtritorius, cuspidibus obtusioribus; infra 7, tres antichi unicuspides,

compressi, primus et secundus breviores, tertius subelongatus, quartus cuspidè elongatâ, gradu anteriori alteroque posteriori abbreviatis, quintus sextus et septimus maximi, multicuspidès, cuspidibus elatioribus, acutioribus.

*Caput* elongatum acuminatum, angustatum, lateribus compressum, supra planiusculum. *Rostrum* obtusum, elongatum, protensum, maxillam inferiorem longitudine magnoperè superans. *Nares* laterales, prominentes, marginibus convolutis. *Lingua* glabriuscula, grandis. *Auriculæ* rotundatæ, prominulæ, nudæ. *Oculi* parvi. *Vibrissæ* elongatæ.

*Corpus* subrobustum, *cordario* molli pilis raris erectis, subelongatis, asperis. *Cauda* longiuscula, teres, attenuata, nuda, squamosa, pilis rarissimis in juventute obsita.

*Pedes* mediocres, plantigradi, pentadactyli, anteriores pollice breviusculo, digitis tribus intermediis longioribus subæqualibus, exteriori abbreviato; posteriores pollice brevissimo, digitis tribus intermediis valde elongatis, exteriori mediocri. *Ungues* mediocres, angusti, arcuati, compressi, acutissimi, retractiles.

The nearest affinity to this genus appears to be met with in *Tupaia*, Raffles. From that group however *Gymnura* is sufficiently distinguished, besides the difference in the system of dentition, by the elongation of the *rostrum*, the comparative robustness of the body, the setose character of the hairs which are sparingly mingled with the soft fur, the small retractile claws, and the nakedness of the tail. In general appearance the group bears a strong resemblance to some species of the *Marsupial* genus *Didelphis*.

RAFFLESII. *Gymn. corpore, pedibus, strigâ supra oculos, pilis raris occipitalibus, dimidioque basali caudæ nigris; capite, collo, pilis dorsi raris, caudæque dimidio apicali albis.*

#### Tab. VIII.

Viri illustrissimi, in omni scientiâ præstantis, in vitâ nobis amicissimi, in morte heu! nunquam satis deflendi, hæc species memoriæ sit sacra.







## DIMENSIONS.\*

	ft.	in.	lns
Length of the body and head, from the extremity of the proboscis to the root of the tail, . . . . .	1	2	3
Length of the tail, . . . . .	0	10	6
——— the head, . . . . .	0	4	3
——— the proboscis, . . . . .	0	0	8
Breadth of the head across the ears, . . . . .	0	1	6
Distance between the eyes, . . . . .	0	1	0
Height at the shoulder, . . . . .	0	5	0
——— at the rump, . . . . .	0	4	6
Length of the anterior <i>tarsus</i> and toes, . . . . .	0	1	9
——— the posterior ditto, . . . . .	0	2	0

ART. XXX. *Analytical Notices of Books.*

*Nova Acta Physico-Medica Academiae Caesareae Leopoldino-Carolinae Naturae Curiosorum.* Tom. xii. pars 2. 4to. Bonnæ. 1825.

THE Transactions of the learned Society above named are so little known to our countrymen generally, and possess moreover so many claims on their attention, that we feel no small share of gratification in introducing its publications to the notice of our readers. The high and obvious scientific value which attaches to many of the papers in the collection dispenses with the necessity of any prefatory remarks; we shall therefore proceed at once to enumerate its zoological contents in a systematic order, dwelling principally on such articles as may appear to be deserving of more particular observation.

Commencing with the Mammalia, we have first to notice a paper "Über eine neue Affenart, den *Cercopithecus? leucopymnus*," by Dr. A. W. Otto. The only specimen of this new species

\* The above dimensions are those of the adult specimen; the younger specimen is of the size represented in the plate.

of Monkey was obtained dead from the proprietor of a Menagerie, who had purchased it in France, and was ignorant of the country from which it was originally procured. It was a female not fully grown, and had been in his possession for two years, during which period its habits were described as docile, cunning and quiet, a disposition which was not the result of disease, as the viscera were perfectly sound, and its death was caused by severe cold. With regard to its affinities, Dr. Otto appears somewhat doubtful, whether to constitute from it a new genus characterized by the want of cheek-pouches, by the peculiar form and disposition of its teeth, and more especially by the singular conformation of its stomach which we shall presently notice. Taking, however, into consideration, that it agrees in many particulars with several of the species which form M. F. Cuvier's new genus *Semnopithecus*, and in the expectation that this agreement will be found still more complete when the latter shall have been more thoroughly investigated, he prefers for the present referring it to that groupe of Asiatic Monkeys, with the following generic character: "Body, limbs, and tail, elongated and slender; face flat; great toe very short; hairs rather long, very soft, shining; hindermost molar teeth of the lower jaw with five tubercles; cheek-pouches wanting; stomach extremely large, cellulous." The character of the new species, *leucoprymnus*, is as follows: "Face, trunk, and extremities blackish; upper part of the head and back of the neck brown; throat whitish-cinereous; crupper and tail whitish; outer incisors of the lower jaw alate; surfaces of the molar teeth oblique."

The entire length of the animal from the end of the snout to the root of the tail is 1 foot 8 inches; the tail, the extremity of which is eroded, measures 1 foot 6  $\frac{1}{2}$  inches; the forehead is broad, and the snout projects comparatively little, forming a facial angle of rather more than 60°. The abdomen is remarkably slender, as are also the fingers and toes in general. Dr. Otto enters with all the minuteness of detail so characteristic of a German description, into every particular of outward form and colour, as well as of internal and anatomical structure. The latter in one essential point, the size and conformation of the

stomach, differs materially from that of any monkey, the anatomy of which has hitherto been the subject of investigation. This organ is at least three times as large as that of any other *Cerco-pithecus* of equal size; and, instead of being as usual round, it is divided into two portions, the left of which forms a very considerable cavity, while the right is long, narrow, and twisted on itself to such a degree that the entire length of the stomach, measured along its greater curvature, is two feet and an inch. But the most remarkable circumstance connected with it is the existence of two flat strong muscular bands, running its whole length, the one along its greater, and the other along its lesser curvature, similar to those which traverse the colon, and forming in it, as in the latter intestine, an uninterrupted series of large cells, which occupy the large cavity to the left, as well as the narrow tubular portion to the right. It is impossible, in the present brief analysis, to notice this interesting fact more in detail, neither could we pass over the subject without directing the attention of the Comparative Anatomist to so striking a peculiarity. The paper is accompanied by an elegant figure of the animal, and by representations of its skull and of its stomach.

The next paper, by the same scientific Naturalist, “*Über eine Neue Antilopenart, die Antilope suturosa,*” contains the description of a new species of Gazelle, belonging to the division with annulated horns twice inflected and with the points directed backwards, to which Professor Lichtenstein, in his arrangement of this elegant and interesting tribe, has given the designation of *Bubalides*. The specific character of the *A. suturosa*, as given by Dr. Otto, is as follows: “Body elongated, heavy, low; tail long floccous; horns long, large, annulate, twice inflected, apices reclined; hairs unequal; forming here and there unusually large and frequent sutures, body brownish-cinereous; abdomen, nates, tail and feet white; a round brown spot on the forehead; and three remarkable white spots on each side of the head.” This animal, like the former, was procured from a Menagerie, the proprietor of which stated that it was brought from Syria.

The “*Adversaria ad dentitionem Equini generis et Ovis domesticæ spectantia,*” by Dr. L. Bojan, are directed to the removal

of certain errors which have hitherto prevailed with respect to the subjects which they embrace. The author proves the existence of deciduous canine teeth in the Horse, those of the upper jaw being placed at some distance behind, while those of the lower immediately adjoin, the last incisor. He also furnishes a history of the respective periods at which the permanent molar teeth of the sheep appear in succession ; the whole of them having, according to his statement, penetrated the gums before the expiration of the third year of the animal's age, although previous authors had concurred in referring them to so late a time as the fifth year. This subject, though not without its zoological interest, is evidently more calculated for the traders in those animals, and we may therefore be excused from dwelling on it with minuteness.

We have next to notice a paper by Dr. F. Rosenthal, "Uber die Sinnes-organe der Seehunde," which contains many curious particulars relative to the anatomy of the genus *Phoca*. From the introductory observations we gather that the author is engaged, in conjunction with Professor Hornschuch, on a Monograph of the genus ; and from their united labours, added to those of M. F. Cuvier, we may expect to derive much valuable information with regard to the habits and manners, (which they appear to have carefully studied,) as well as the scientific arrangement of this long neglected groupe.

M. J. van der Hoeven's "Corrections au Mèmoire sur le genre *Ornithorhinque*," are the result of his examination of the four individuals preserved in the Parisian Museum. Of these, one is a male of the *Ornithorhynchus rufus* of Péron, and two are males, and the remaining one a female of the *O. fuscus* of the same able naturalist. From the skeletons of these animals M. Van der Hoeven has ascertained that he was in error in adverting to the form of the lower jaw as a distinguishing character between the species ; an error which originated in the alteration in the appearance of the beak, produced by the irregular desiccation of the membrane covering it. He obtained no additional confirmation of the value of the character derived from the tail ; but that deduced from the form of the spur in the males, on which he had previously laid little stress, was strongly confirmed, that organ

being thick and conical in the *O. rufus*, and slender in the *O. fuscus*.

In the Memoir which we have now to notice, "Über die hintere extremität der Ophidien," a most important fact, and highly illustrative of the manner in which all Vertebrated Animals resolve themselves into one common type, is placed in the clearest light by the investigations of Professor Mayer. It is known that many of the Cartilaginous Fishes possess a kind of posterior limb, and it was natural to suppose that animals of a higher class, such as Serpents, would not be found wholly destitute of a similar organ. That a rudiment of this organ actually existed in the claws or spurs, as they have been termed, of the *Boæ*, has been suspected by several distinguished Naturalists; but it was reserved for the authour of the present Paper to investigate the subject thoroughly, and to prove by the anatomical examination of a great number of Snakes of different genera, the complete analogy which exists between the imperfect structure found in the latter, and the posterior members of other Reptiles. The results of his labours, as far as they have been hitherto carried, have induced him to propose a new division of the Order into ΠΛΕΝΟΠΟΔΑ, consisting of those Snakes whose rudimental feet are externally visible, and comprising *Boa*, *Python*, *Eryx*, *Clothonia*, and *Tortrix*; ΚΡΥΠΤΟΠΟΔΑ, in which the bony rudiments are entirely concealed beneath the skin, containing *Anguis*, *Typhlops*, and *Amphisbæna*; and a third family, in which the rudimental feet consist merely of cartilaginous slips (ΧΟΝΔΡΟΠΟΔΑ), or are entirely wanting (ΑΠΟΔΑ). To the latter family belong *Coluber*, (in one species only of which, the *C. pullatus*, Dr. Mayer discovered, in the same situation with the foot-rudiment in the preceding Snakes, a tolerably strong curved cartilage,) *Crotalus* and *Trigonocephalus* (in which no traces of this organ could be discovered), and lastly the enigmatical genus *Cæcilia*, which is equally destitute of tail and of foot rudiments.

The description of these rudimental appendages is given at considerable length, especially in the genus *Boa*, in which the claws are more prominent externally, and the internal parts of the organ more fully developed, than in any other Snakes. The bony

structure consists, first of the well-known claw, placed near and on each side of the anus, and articulated with a small bone, which occupies its cavity, and is regarded as the phalanx of a toe; this phalanx is connected with a strong bone concealed beneath the skin, to which Dr. Mayer assigns the name of *os metatarsi*; and this again is articulated with the longest and principal bone of the limb, called by the authour *os cruris seu tibia*, which has also at its under and outer extremity two apophyses, considered as analogous to the *ossa tarsi*. The muscles appropriated to these bones consist of an *extensor longus pedis*, an *extensor brevis*, a *flexor pedis*, the strongest of the whole, an *abductor* and an *adductor*; which with their attachments and actions are all minutely described. Of *Eryx*, *Python*, and *Clothonia*, the authour has been unable to procure specimens for examination; but he quotes the authority of Oppel, Daudin, Cuvier, and Schneider, for their possessing claws near the anus, and hence he considers himself justified in attributing to them a similar internal structure to that of *Boa*. With regard to these organs in the genus *Tortrix* of Oppel (*Ilaysia* of Hemprich) he enters into more detail, having examined four different species of the genus, which forms the passage from the *Phænopoda* to the *Cryptopoda*, its claws being buried in a cavity near the anus, which has only a very fine opening in the skin, through which they can be protruded and retracted at pleasure. The bones and muscles are perfectly similar to those of *Boa*, except that they are comparatively smaller and less distinct.

In the succeeding family, the *Cryptopoda*, these rudiments, which have no external claws, gradually degenerate into small and simple slips of bone, occupying the same situation as in the more perfect genera, beneath the *Musculus transversalis*, and between it and the *peritonæum*. In the last family they are completely lost. But our limits warn us not to pursue this subject further. We must, however, observe, that in treating of *Cæcilia*, Dr. Mayer expresses his dissent from all the naturalists who have hitherto written on that obscure genus, with respect to what have been considered as its most essential characters. The wrinkles on the skin, for instance, which have been so much in-

sisted on, he declares to be in themselves very unimportant, inasmuch as they are mainly due to the contraction of the skin by means of the spirit in which the animals are preserved. It is also described as being entirely devoid of scales, but the author enters into a very minute account of the peculiar manner in which its outer covering is formed, which clearly proves that this also is a mistaken notion.

A previously unpublished species of Snake, collected during his travels in Brazil, is described by Prince Maximilian of Wied, in a paper "*Über Coluber Lichtensteinii, eine neue Brasilianische Natter-Art.*" Its specific characters are thus given: "Tail about one-eighth of the whole length; abdominal scuta 178-181; caudal scuta 85-97 pairs; colour pale grey-yellowish fawn, with a series of large grey-brown spots, the margins of which are darker, extending along the back, lozenge-shaped in the neck, and more irregular on the rest of the body, each of the latter being connected with two lateral spots; scuta of the sides of the jaws bordered with black." The length of the body varies from 3 ft. 9 in. to 5 ft. 3 in. and it probably attains a still larger growth. It inhabits the southern localities of the Eastern Coast of Brazil, and is not uncommon in marshy places. Its habits are not so active as those of many of its congeners, and it frequently suffers itself to be approached very nearly without shewing any signs of uneasiness. Toads and frogs appear to form its principal food. It is the *C. capistratus* of Professor Lichtenstein's Catalogue of the Duplicates of the Zoological Museum at Berlin.

The "*Beiträge zu einer Anatomischen Monographie der Rana Pipa,*" by Dr. Mayer, present the results of an anatomical investigation of three individuals of the Surinam Toad, two of which were male and one female. The paper does not profess to give a complete and perfect anatomy of the animal, which the author thought quite unnecessary after the able manner in which the subject had been treated by Breyer, Rudolphi, Meckel, and Cuvier. He has therefore confined himself to the illustration of particular facts which had hitherto been left in obscurity, and to the pointing out and correcting such of the statements of former

naturalists as do not coincide with his own observations. These details, however, we must pass over, and proceed to give a brief outline of another Anatomical Paper of great interest, and which we lament that our limits preclude us from noticing more at length.

This article is entitled, "Über die Entwicklung der Eier im Eierstock bei den Gespenstschrecken, und eine neuentdeckte Verbindung des Rückengefäßes mit den Eierstöcken bei den Insecten," by Dr. Johannes Müller; a title, which although tolerably comprehensive, is by no means adequate to the vast field of investigation into which the learned authour has entered, and which he has cultivated with a degree of zeal, perseverance, and success, highly creditable to his talents. Instead of confining himself to the mere anatomical demonstration of the communication which he has discovered between the dorsal vessel of insects and their ovaries, and of simply pointing out the various changes which take place in the latter and in their contents during the development of the eggs, he launches out into a most extensive physiological enquiry into all the leading facts connected with the circulation, growth, and reproduction of insects, and throws no inconsiderable light upon all these subjects, which in spite of the patient and laborious researches of many able naturalists, from Swammerdam and Leeuwenhoek to Marcel de Serres and Herold, still remain involved in obscurity. The simple fact, indeed, of the existence of a pervious connexion between the ovaries and the dorsal vessel, which latter had hitherto been regarded as a mere tube, entirely destitute of ramifications, and possessing no direct means of communication with any other organ, is so important in every point of view, and disturbs all previous theories on the subject to such a degree, that its discovery can hardly fail to operate a complete revolution in the ideas hereafter to be entertained with regard to the office of that vessel, and its influence on the animal economy.

In order to convey to our readers some notion, however imperfect, of the value of the facts which are developed in this important paper, we shall confine ourselves to a faint outline of the minute description given by its authour of this appendage to



the ovaries in the gigantic *Phasma Ferula*, Licht., in which his discovery was first made. We are compelled, however reluctantly, to pass over every other part of his labours, which embrace the whole anatomy of this insect, and to apply ourselves solely to the one chief fact, to which all the rest are but subsidiary. The ovaries, which occupy the whole length of the abdomen, consist of about 50 conical tubes, the bases of which communicate with the oviduct of each side. The tubes are from 4-5 lines in length, and contain each from 8-14 eggs in various stages of development, together with certain other parts which appear to furnish the materials for their growth. The eggs decrease in size towards the apices of the tubes, which pass insensibly into a very fine elastic filament. These filaments, of equal breadth throughout, are inserted at their opposite extremity into the dorsal vessel, with the inner lining of which they are unquestionably continuous. They contain a granular, medullary, irregular, and frequently interrupted substance, which is continued from the interior of the dorsal vessel, and lies in immediate contact with the contents of the tubes. "When these filaments," observes the authour, "have once been seen, the idea of a mistake can no longer exist. I have shewn them to many; the connexion is so frequent, so obvious, and so circumscribed, that there is no occasion to employ a microscope to be convinced of its existence. I have never heard a second opinion on the subject."

The connecting filament, however, does not merely unite the dorsal vessel with the apex of the ovarian tube; it passes into the interior of the latter, and lines its internal surface in immediate contact with its contents, and expanding as it advances, terminates near the union of the tube with the oviduct, in a free edge. The portion which is thus enveloped by the tube is capable of being separated from it; it alone contains the eggs and their rudiments, the filamental portion which is exterior to the tube being filled with the irregular medullary substance derived from the contents of the dorsal vessel. All these facts are well illustrated in the plates which accompany the Memoir.

The discovery of this extraordinary conformation in the ovaries

of *Phasma Ferula*, naturally led the author to investigate those of other Insects, and a vast number of observations, all tending to establish the same conclusion, which can no longer be considered as doubtful, are detailed in the subsequent pages. The observations are arranged under an arbitrary division, resulting from the shape and disposition of the ovaries, which are distributed into fifteen distinct forms, giving rise to corresponding differences in the number and insertion of the connecting filaments, which vary from one to fifty or more on each side. But as these varieties appear to be totally unconnected with the natural affinities of Insects, the most opposite families and even orders, frequently presenting nearly the same form of ovary, it would be useless to reproduce them here. We must not, however, entirely omit one observation which occurs in the description of the nervous system of the *Phasma*; we mean the discovery of a ganglionic, in contradistinction to the dorsal system, which is universally, we believe, considered as the only one possessed by Insects. This single system has in fact been generally regarded by physiologists in the light of a ganglionic system; but our excellent and truly scientific countryman, Mr. Kirby, has lately given strong reasons for believing these animals to be possessed of the faculties which result from a union of both systems, and if the discovery of the learned Professor, which he proposes to investigate further, be founded in fact, here will be another most important alteration to make in the received theories. At the same time we cannot help suspecting that an ulterior examination will prove the ganglionic system of Dr. Muller to be either identical with, or analogous to, the recurrent nerves described by Swammerdam, Lyonnet, and Cuvier, the functions of which undoubtedly stand in need of further elucidation. The authour also notices a connection of the gall-vessel with the dorsal vessel in *Mantis Ægyptiaca*, and although he does not venture to assert, he seems inclined to believe, that similar communications will ultimately be detected between the latter and all the secretory organs of Insects.

The novelty and importance of the principal fact established in this excellent Paper, have led us to incroach somewhat more

than usual upon our space, and for having done so they must plead our excuse. Its novelty cannot be more convincingly shewn than by the circumstance, that, in the invaluable compendium which Mr. Kirby has given us of his own observations, and of those of other entomological anatomists, no such connection is once alluded to. It is equally neglected in that part of the work of M. Léon Dufour, published at the latter part of the last year, in the *Annales des Sciences Naturelles*, which treats of the female organs of generation. The connecting filament, as Dr. Muller denominates it, has indeed been frequently traced to some distance from the ovary, but it has never before been even suspected that it formed a pervious communication with the dorsal vessel; on the contrary, it has been looked upon merely as a suspensory ligament. The importance of the fact will be fully appreciated by all who take an interest in the study of comparative physiology. The other part of the paper, which relates to the development of the eggs, is also remarkable for the same profound research, and although not so important in its influence on the elementary principles of the science, abounds with new and interesting facts well deserving of an attentive consideration.

Among the Insects described by M. Klug in his "*Entomologiæ Brasilianæ Specimen alterum, sistens Insectorum Coleopturatorum nondum descriptorum Centuriam*," there are several which deserve a particular mention. Such are the *Buprestis hydroptica* and the *B. penicillata*, which in their two-horned heads, and in the remarkable dilatation of their elytra before the apex, offer so singular a form, as almost to induce us to regard them as the types of a new subgenus. The *Lytta vidua* appears intermediate in habit between the genera *Cantharis* and *Tetraonyx*, Lat.; the *Lytta depressa* exhibits the form of *Pyrochroa*; while the *Lytta Herculanea*, Germar, presents so striking a deviation from the type of that genus, in its lengthened stature, its narrow and almost oblong head, and its considerably attenuated thorax, as to require for itself a new generic appellation. Among the *Saperdæ* we are also presented with four species, which evidently form a section or subgenus, distin-

guished by the very great dilatation of the elytra posteriorly, giving to these Insects the general appearance of the genus *Lycus*, many of the species of which they also imitate in the disposition of their colours. In addition to the genera above noticed, this century embraces insects referable to the following types: *Trachys*, *Rhipicera*, *Chelonarium*, *Parnus*, *Lucanus*, *Attelabus*, *Prionus*, *Ctenodes*, (intermediate between *Prionus* and *Trachyderes*,) *Trachyderes*, *Cerambyx*, *Callichroma*, *Lamia*, *Molorchus*, and *Stenopterus*. Of the accuracy of the descriptions the name of Professor Klug affords a sufficient guarantee. The Paper is illustrated by coloured engravings of sixty of the Insects described in it.

The "Insecta Coleoptata, quæ in itineribus suis, præsertim alpinis, collegerunt, Dr. D. D. Hoppe and Dr. F. Hornschuch," (the last paper in this valuable collection which it falls within our province to notice,) contain descriptions of fourteen European Species by Sturm and Hagenbach. They are referred to the genera *Cychrus*, *Carabus*, *Licinus*, *Lebia*, *Melolontha*, *Scarabæus*, *Chrysomela*, *Hypera*, and *Loborhynchus*, and appear to exhibit no feature of peculiar interest except to the collector of species. Figures of the whole of them, with the exception of the *Carabus Hoppei*, are given from the excellent and esteemed pencil of Sturm.

---

*Journal of the Academy of Natural Sciences of Philadelphia.*  
8vo. Vol. iv. Part ii. Nos. ii. and iii.

CONTINUING our analysis of this valuable record of the labours of our transatlantic brethren, and arranging our notices as before, the first article to which it is necessary to advert is the "Account of a new species of the genus *Arvicola*: by George Ord," *A. riparius*, Snout thick, obtuse; eyes small; ears of a medium size; tail less than half the length of the body. The head of this species is large; and its ears are roundish and almost concealed by the long hair of the cheeks. The tail is covered with hair, and tufted or pencilled at the tip, becoming somewhat qua-

drangular after death. The fore-legs are very short, and the posterior part of the body slenderer and weaker than the anterior. The colour of the upper parts is tawny-brown mixed with black; that of the lower parts is cinereous. Its length from the nose to the anus is five inches; the tail being only two inches long.

The remaining articles relating to the *Mammalia* have already been laid before our readers: the first of them entitled "A new genus of *Mammalia* proposed, and a description of the species upon which it is founded, by T. Say and G. Ord," having been given at page 293 of our second volume, with figures of the animal, *Neotoma floridana*, and of its teeth; and the second, the "Description of a new species of *Mammalia* whereon a genus is proposed to be founded," by the same authours, having also been transferred to page 296; the teeth having been figured to illustrate the generic characters of the *Sigmodon hispidum*.

To the department of Ornithology only one naturalist has contributed, M. Charles Lucian Bonaparte, Prince of Musignano, with whose high talents and character the naturalists of this country have so recently had opportunities of becoming acquainted, and two communications from whose pen, in the same branch of science, enrich our present volume, at p. 49 and p. 212. Zealous, devoted to science, availing himself advantageously of the observations of others, carefully weighing their value and comparing them with each other and with those deduced from his personal experience; such are the characteristic traits which authorize the anticipation of the most important results from his perseverance in the studies he has adopted. Of the continuation of his "Observations on the Nomenclature of Wilson's Ornithology," it is unnecessary to speak, as we have already adverted to it in our second volume in terms of just approbation. The other articles from his pen consist of a "Description of a new species of South American *Fringilla*," *F. xanthorhoa*, Dusky; rump yellow; primaries edged with greenish; tail tipped with white: "Descriptions of ten species of South American Birds: and "Descriptions of two new species of Mexican Birds." The latter are the *Garrulus ultramarinus*, Blue, beneath ashey white; tail equal: and the *Cassicus melanicterus*, Black; crested; uropy-

gium, wing-coverts, lower part of the back, and the tail, yellow; middle feathers of the tail entirely black, lateral ones black on their margins.

Of the ten Birds from South America only four are represented to be new. These are the *Monasa fusca*; Dusky-brown, with the shafts of the feathers yellowish; quill and tail feathers without spots; with a white spot on the throat, and a black fascia on the breast: *Muscicapa violenta*, Tail six inches long, strongly forked; body cinereous, beneath white; head black, the feathers of the vertex golden-yellow at the base: *M. tænioptera*, Cinereous, wings and tail black; throat, abdomen, a broad fascia on the wings, and the tip of the tail, white: and *M. pullata*, Cinereous, wings and tail black; tail forked, its outer feather being white on the exterior side. The remaining birds, although previously named by other authours, are now for the first time accurately described. They are the *Picus rubricollis*, Gmel., *Dendrocolaptes angustirostris*, Vieill., *Tanagra flava*, Gmel., *Caprimulgus semitorquatus*, Gmel., and *Rallus nigricans*, Vieill.; the *Fringilla flaveola* being noticed merely for the purpose of fixing its habitat to Brazil.

The papers relating to Erpetology are four in number, three being from the pen of Dr. Harlan and one from that of Mr. Wood. To the former we are indebted for the "Description of a new species of Biped *Seps*." *S. sexlineata*, Body above and beneath whitish, clothed with equal rounded scales, compactly imbricate; top of the head blackish, furnished with twelve irregularly shaped scales or plates, (similar to those of the *Ophisaurus*,) of different figures and unequal sizes; the three largest of the plates are placed one before the other, and the nine smaller are distributed around the three first. Three dark punctuated lines on each side of the body extend from the neck to the middle of the tail, run into each other anteriorly, and form a single black line which passes through the eyes extending to the nostrils: rictus of the mouth wide: nostrils situate on a line with the eyes near the extremity of the snout: a single row of minute teeth lines each maxilla: tail rather more than one-fourth the length of the body, cylindrical, somewhat subulate: anus a transverse slit, one inch

from the extremity of the tail : on each side of the vent projects a small leg, terminating in two corneous toes, somewhat aduncate, the external considerably the longest; external ear, or membrana tympani, a scarcely visible point posterior to the angle of the mouth. The habitat of this species, which is figured, is unknown; but this is unimportant as regards geographical distribution, the species of *Seps* being known to inhabit each of the grand divisions of the globe.

The "Description of a new species of *Scincus*" by Dr. Harlan, is that of the *S. bicolor*, Fuscous above, silvery-white beneath; with two longitudinal white lines on each side; tail slender, rather longer than the body; anterior and posterior feet with five toes. It inhabits the United States. Its total length is nine inches and four-tenths, that of the tail being five inches and four-tenths.

To Dr. Harlan we are also indebted for a "Description of two new species of *Agama*." The first of these is the *A. vultuosa*. Body generally cinereous; neck longitudinally plicate beneath; tail slender, long; scales rhomboidal, carinate; anterior part of the back, and posterior part of the head, rather crested. The total length of this species is nine inches and eight-tenths, that of the tail being seven inches. It appears to be referable to the genus *Calotes* of Cuvier, and is common in gardens in the neighbourhood of Calcutta. The second species presents a striking contrast to the preceding. It is characterized as the *A. cornuta*. Body depressed, ovate, scabrous; above variegated with fuscous, beneath white; head quadrangular above; tail scarcely half the length of the body. The total length is four inches, that of the tail being one inch and a half. It inhabits the great plains east of the Rocky Mountains, and is readily to be distinguished from the other orbicular lizards by the numerous spines which are scattered over its upper surface, and especially by the strong spines projecting backwards from the forehead and vertex.

The paper for which we are indebted to Mr. W. W. Wood is entitled a "Description of a new species of Salamander." This species, the native country of which is unknown, is thus characterized; *S. punctatissima*, Grayish, entirely covered with numerous black dots; extremities long and slender; tail a little longer

than the body. The total length is three inches and three-fourths; that of the tail being two inches and one-eighth.

In Ichthyology, a department of natural science which is too generally neglected, there are two articles contained in the present volume. In one of these, the "Descriptions of two new species of the Linnean genus *Blennius*, by C. A. Le Sueur," characters are given of the *B. Herminier*, and the *B. Hentz*. The other, entitled "Descriptions of four new species of the Linnean genus *Blennius*, and a new *Exocætus*, by W. W. Wood," comprising two species of *Blennius*, Cuv., the *B. geminatus* and *B. punctatus*, two species of *Pholis*, Artedi, the *P. novem-lineatus*, and *P. quadrifasciatus*, and the *Exocætus appendiculatus*; figures being given of the two last-mentioned species.

Of the two papers that relate to the *Mollusca*, one is peculiarly interesting. It is entitled "Remarks on the floating apparatus, and other peculiarities of the genus *Janthina*, by Reynell Coates, M. D.," and illustrates, from the personal observations of the authour during a recent voyage to the East Indies, the correctness of M. Cuvier's statement, that there exists no anatomical connection between the animals and the air-cells of their float. Of the mode in which this organ is constructed, or rather repaired, the following description is given. Individuals being placed in a tumbler of brine, and a portion of the float being removed by the scissors, the animal very soon commenced supplying the deficiency; the foot was advanced upon the remaining vesicles, until about two-thirds of the member rose above the surface of the water; it was then expanded to the uttermost, and thrown back upon the water, like the foot of a *Lymneus* when commencing to swim; in the next place it was contracted at the edges, and formed into the shape of a hood, enclosing a globule of air, which was slowly applied to the extremity of the float. A vibratory movement could now be perceived throughout the foot, and when it was again thrown back to renew the process, the globule was found enclosed in its newly constructed envelope. From this it results that the membrane which encloses the cells is secreted by the foot, and that it has no attachment to the animal other than the close cohesion resulting from the nice adaptation of proximate



surfaces. The form of the float varies in the species respectively. In the *J. fragilis* it is convex, subcarinate above, and concave beneath, straight, and composed of large vesicles: in *J. globosa*, the vesicles are smaller, the float is flat above and beneath, and by the re-union of one of the edges, it is formed into a spiral and nearly circular disk: and in *J. exigua*, it is straight, narrow, and flattened, and the vesicles are small. Along the under surface of the float, a little line of pearly fibres is remarked, to which are attached the eggs of the animal. Dr. Coates has had no opportunity of observing those of the *J. fragilis*, but he is strongly inclined to believe that the eggs figured by Sir E. Home in the Philosophical Transactions for 1817, belong to some other marine animal. He grounds this belief on the dissimilarity between these figures, and the eggs of the *J. globosa* and the *J. exigua*. In the two last-mentioned species the eggs are contained in little membranous bags of some consistence, which are attached in rows to the pearly fibres of the under surface of the float by small filamentous peduncles of an appearance similar to that of the fibres. These bags are covered with minute gelatinous, conical eminences, and are partially divided by incomplete septa, as may be discovered by means of a powerful lens. In the *J. exigua* the division is very partial; but in the *J. globosa* it gives the whole sac a chambered appearance. It would seem that the animal occupied considerable time in the deposition of its eggs, the bags nearest to the extremity of the float being constantly found empty, while the central ones contain young shells fully formed, and those towards the animal are filled with the eggs. It appears probable that the young animals, when liberated from their chambers, ascend the float of the mother, and in this way gain access to the surface, and construct the elements of their future support.

The other paper is from the pen of Mr. Say. It is "On a new species of *Modiola*," and describes, under the name of *M. opifex*, a shell nearly allied to the *M. discors* and *M. discrepans*. It is a native of Minorca, and was found inclosed in a conical mass of fine agglutinated sand attached by a broad base to the surface of a *Pecten*.

In Entomology the only article is entitled "Descriptions of new Hemipterous Insects collected in the expedition to the Rocky Mountains," by Mr. Say. The number of species described is about fifty; but it is proper to remark that Mr. Say adopts the Linnean definition of *Hemiptera*, and thus confounds under one order insects referable to the two classes, *Mandibulata* and *Haustellata*; for instance *Gryllus*, *Pentatoma*, and *Cicada*. The species are all referred to established genera, and appear to present no striking peculiarities.

The only remaining papers connected with Zoology are the "Description of a new species of *Trilobite*," by Dr. Bigsby; and observations "On two genera and several species of *Crinoidea*," by Mr. Say. The latter has already been given entire at page 311 of our second volume, together with some valuable additions from the pen of Mr. G. B. Sowerby. Of the former we have only to remark that it is referable to the genus *Paradoxus* of Brongniart, and that it was discovered in limestone above the saliferous sandstone, and consequently in a more recent formation, than the rocks best known as abounding in *Trilobites*.

---

*Voyage autour du Monde, fait par ordre du Roi, sur les Corvettes l'Uranie et la Physicienne, pendant les Années 1817, 1818, 1819, et 1820, par M. Louis de Freycinet, Capit. de Vaisseau, &c.*

*Partie Zoologique; par MM. Quoy et Gaimard, Médecins de l'Expédition. Livraisons i.—xiii. 4to Planches coloriées lxxviii. Folio.*

IN the letters of M. Arago, and in the numerous extracts and notices contained in the various Journals, the outlines of the Voyage round the World, undertaken by the orders of the French government in the years 1817, 1818, 1819, and 1820, have been so repeatedly given as to have become familiar to every reader.

To the route pursued by the Corvettes *L'Uranie* and *La Physicienne* until their final loss off the Falkland Islands, it is therefore unnecessary to advert particularly, while noticing the zoological results of this interesting expedition. Numerous and valuable as they are, and grateful as we must consequently feel to MM. Quoy and Gaimard for their collection, it may readily be presumed that they might have been rendered still more important had due attention been paid to the subject by the heads of the French marine. It is indeed somewhat singular that a government which professes the warmest attachment to scientific pursuits, and which even numbers among its members, men whose talents in the various departments of science, and especially in Zoology, cannot be disputed, should have neglected to avail itself to the fullest extent of the opportunities afforded by such a voyage, as that of M. Freycinet. To account for the anomalous circumstance of no naturalist whatever having been attached to a voyage of scientific discovery, we are informed that this able navigator had been so forcibly struck by the irregularity and insubordination which he had witnessed in the expedition of M. Baudin, (an expedition which is too generally known in consequence of the cruel and ungenerous treatment of Captain Flinders, while it is strongly impressed on the memory of naturalists by the names of Péron and Le Sueur,) that he had determined on receiving under his command no person except such as belonged to the marine, and were consequently dependent on him as their superior officer. He ought surely to have been aware that to him as commandant every person on board, whether civil or naval, was bound to submit, and that even a passenger embarking under his charge, would have been responsible to him for his conduct so long as he remained with the expedition.

We will not stop to inquire whether the objection of M. Freycinet might have originated in any hidden motive; nor will we even suspect the possibility of its recurring to his recollection, that the laurels of the former expedition were entirely reaped by the naturalists who formed part of it. It is sufficient to say that his objection was received as valid by the French government. No naturalist was therefore appointed to accompany him; and

this department of science was consequently left to the medical officers of the two corvettes. Of the duty thus gratuitously undertaken by them they have well acquitted themselves, and they are therefore entitled to our most cordial thanks; but these thanks are not equally due to their superiors. If the fact be, as M. Geoffroy Saint-Hilaire has stated in his report on their labours, that "in the French monarchy every thing ought to be done, and is done, by the king, and for the king," we almost doubt whether our zoologists have not been guilty of *lèze-majesté* by interfering with the prerogative of their royal master, in performing more than was set down for them. That he has virtually pardoned them for this offence of commission, may be inferred from his having adopted the results of their labours, and having given them to the public, as part of the official narrative: but he has himself to answer to the scientific public, whom he courts, for his own sin of omission, which we sincerely hope will not be repeated in this kind, either by him or by any other government. To the trifling expense, as compared with the extensive information to be acquired by attaching a competent naturalist to every expedition of discovery or of survey, no objection would we are confident be offered by the most economical of our own purse-holders. Were this the proper place for such an appeal, we would strenuously urge the subject on the attention of the British government, and fervently entreat them to embrace every opportunity of extending our knowledge of the animal and vegetable kingdoms, and thereby probably increasing our domestic comforts and our national resources; but we are here precluded from doing so, and must return to the more immediate object of this article, from which we have already wandered too far.

The official account of the expedition of M. Freycinet, as published by the French government, is divided into seven parts: the History of the Voyage; the Hydrography; the Meteorology; the Philology and Vocabularies; the Observations on the Pendulum and Magnetism; the Botany; and the Zoology. Of this latter department alone have we to speak. Its execution will be sufficiently characterized by observing that it is such as was to be anticipated in a national work supported by national resources,

For the use of the copy which we have consulted, we have great pleasure in returning our thanks to Barron Field, Esq. F.L.S., by whose kindness we were favoured with the use of the earliest copy which reached the British metropolis.

In the arrangement of their work MM. Quoy and Gaimard have followed that of the Règne Animal of the Baron Cuvier. Their first chapter consequently embraces the history of the most striking variety or species of the human race which they had occasion to observe, the Islander of New Guinea. Of this we shall offer no analysis; nor shall we enter into any details with respect to the second chapter which contains general remarks on the *Mammalia* and Birds observed at the principal resting-places of the expedition, each of these furnishing materials for a separate section. The third chapter is devoted to the descriptions of the *Mammalia* collected, and which, although not numerous, nor offering any type of form differing from those already known, are yet interesting as exhibiting several new species.

The first of these is a new species of *Pteropus*, from the Island of Guam, one of the Ladrões. It is thus characterized, *P. Keraudren*, "Body and wings blackish; neck, shoulders, and hinder part of the head yellow; auricles short; tail none." The extent of its wings when expanded varies from two feet to two feet and a half; and its length from the tip of the nose to the anus, from six to eight inches. This is succeeded by a new species of *Perameles*, from New Holland, the *P. Bougainville*, "Body rufous above, cinereous beneath: head elongated, acute; ears ovate, long." It is chiefly by this last character that it differs from *P. nasuta*. The *Dasyurus Maugei*, a well known species, is now figured for the first time; as is also the *Phalangerista maculata*; another species of this latter genus being given as new under the name of *P. Quoy*, but which has been previously described by M. Desmarest under that of *P. Papuensis*. The same observation applies to the *Potorous White*, a species which has also been previously described by Desmarest as the *Kangurus Gaimardi*, and by MM. Quoy and Gaimard them-

selves under the name of *K. lepturus*. It appears to be the same with the Kangaroo-Rat, the *Potorous murinus*. The specimen brought home by the expedition was from the neighbourhood of Port Jackson; the head of a second species of the same genus found on Dirk Hatich's Island is the only fragment of the *P. Lesueur*; and a skeleton in the Paris Museum differs so considerably in the form of the head as to appear to constitute a third species, to which the name of *P. Peron* is proposed to be given. The only true Kangaroo described is equally unfortunate with the preceding. It is the *Kangurus laniger* of MM. Quoy and Gaimard, whose name must yield to the prior claim of *K. rufus* assigned to the same animal by M. Desmarest.

In an appendix relative to the *Seals* and the *Cetacea*, which forms the fourth chapter, the authours have embodied much curious information with respect to the habits of these animals, the observation of which so seldom falls to the lot of those who are capable of rendering it available to the purposes of science. The common opinion represents the Whales as almost continually throwing up jets of water from their spiracles. That this occasionally happens cannot be doubted; but it is only under peculiar circumstances. In many hundreds of these animals which MM. Quoy and Gaimard observed in the course of their voyage in the Southern Seas, it occurred to them to witness this fact only once, in a Whale which was on shore on one of the Malouine Islands, and which at ebb-tide threw up water from its spiracles, respiring at the same time with considerable noise. Much interesting matter is also contained in this appendix relative to the fishery, for which the authours are chiefly indebted to the crews of the different whalers with which they met; this, however, we must pass by, and proceed to the enumeration of the new species noticed by them. These include the *Physeter polycypus*, so named from the protuberances on its back, which is figured from a drawing communicated by Captain Hammat, but is not described; the *Delphinus Rhinoceros*, which is black, spotted, with a protuberance resembling a horn on its occiput; the *D. albigena*, altogether black, with a large white fascia on each side of the

head, and surrounding the eye; and the *D. cruciger*, which is white above and below, with a kind of black girdle across the belly.

In the department of Ornithology the acquisitions are more numerous and valuable, including many species hitherto undescribed, and one type of form which is altogether new to the Zoologist. We shall enumerate the species in the order in which they are described and figured, interspersing the list with occasional observations, and with the characters assigned to such of the birds as are new.

*Falco (Astur) leucorrhous*. Body fuscous blackish: cere and feet yellow; uropygium white; tail with three white fasciæ beneath.—From Brazil.

*Falco (Buteo) polyosoma*. Body cinereous: cere and feet yellow: tail whitish, with transverse fuscous lines, and margined at the apex with black: wings long.—From the Malouine Islands.

*Falco (Circus) histrionicus*. Body, above griseous, beneath white with transverse fuscous fasciæ: cere and feet yellow.—From the Malouine Islands. Of this species the young as well as the adult is figured.

*Lanius ferrugineus*. Lath. The specimen figured by M M. Quoy and Gaimard, was obtained in the Isle of France, into which it is known to have been introduced from the Cape of Good Hope, its original country. It appears to belong to the genus *Malacotus*, proposed by Mr. Swainson in the first volume of the Zoological Journal, which forms the African type corresponding with the *Thamnophili* of South America.

*Vanga striata* ♂ and ♀; the former being the *Vanga gris*, and the latter the *Vanga roux* of M. Vieillot. It is a true *Thamnophilus*, and may be regarded as almost typical of that genus in the characters of the tail. The species was described in the first volume of the Zoological Journal, under the name of *Thamnophilus Vigorsii*, and both the male and female birds were figured in the Supplementary Plates.

*Barita Tibicen*, Cuv.; a well-known species; being the *Coracias Tibicen* of Latham, and a *Cracticus* of Vieillot, the latter generic name having the priority over that of Cuvier. It possessed great

powers of voice, imitating the poultry on board the corvettes, and even whistling airs.

*Graucalus viridis*, the *Sphecothera viridis* of Vieillot; from Timor.

*Turdus Falcklandii*, Pectus and abdomen rufescent: throat spotted with black.—The trivial name points out the country in which this species was captured, but where it seems to be only an occasional visitor, its true country appearing to be South America. It very closely resembles the Griverou de Bresil, figured in Le Vaillant's Oiseaux d'Afrique, differing chiefly in the linear spots under the neck being more distinctly circumscribed in the *T. Falcklandii*.

*Oriolus regens*, the *Sericulus chrysocephalus* of Swainson, Zool. Journal, i. 478. It is unfortunate that M. M. Quoy and Gaimard have been unable to furnish any information with respect to the habits of this bird, the precise location of which remains therefore still undecided. The only specimen which they possessed having been lost on the voyage, they have been compelled to employ for their engraving a drawing by Lewin, who regarded it as a *Meliphaga*.

*Malurus textilis*, Body throughout somewhat rufous, marked longitudinally with brown points: bill black, strong: tail long. This species keeps under bushes in the neighbourhood of the Baie des Chiens Marins, New Holland, where it runs quickly, and might be mistaken for a mouse, from its resemblance in colour, and in its slight shrill whistle.

*M. leucopterus*. An undescribed species from Dirk Hatich's Island, of which a specimen is contained in the collection of the Linnean Society.

*Emberiza melanodera*, Body yellowish-green: head and neck fuscous above; throat black. From the Malouine Islands.

*Xanthornus Gasquet*, Body and wings fuscous: abdomen, flexure of the wings, and uropygium yellow.—This species, which differs chiefly from the Troupiale bicolor of Vieillot, by its broad yellow fascia on the extremity of the back, is referable to the genus *Læistes* of Vigors. It is identical with the *Læistes Suchii*, Vig., described at page 191 of our second volume.



*Dacelo Gaudichaud*, Head, scapulæ, and upper part of the back, black : throat whitish rufescent : back and uropygium cyaneous : pectus and abdomen rufous.—From New Guinea.

*Cuculus Guira*, Latham, the *Crotophaga Pirririua* of Vieillot. In its solitary habits this bird differs from the Anis, with which it was associated by Vieillot.

*Psittacus erythropterus*, Latham ; a *Platycercus* of Vigors. Only one specimen was seen by M M. Quoy and Gaimard, which differed considerably from the *Ps. Melanotus* of Shaw.

*Columba Pinon*, Head, neck, pectus, and greater part of the back, cinereo-fuscous : wings and tail slate-coloured : tail with a transverse fascia : feet red.—From Rawak, one of the New Guinea Islands.

*Columba ænea*, Lath.

*Columba Pampusan*, Body rufous ; bill black : tail with a transverse black fascia : feet rather rufous.—From Guam, one of the Marianne Islands.

*Columba Macquarrie*, Tail long : head, pectus, and uropygium, cinereous blue : eyes naked, rather yellow : wings spotted with whitish lunules.—This species is known only from a drawing presented to the expedition by Governor Macquarrie. Another, which was merely casually seen, is mentioned in a note under the name of *C. Jamieson*, from the gentleman in whose poultry-yard it was.

MEGAPODIUS. *Bill* slender, weak, straight, equally broad as high, flattened above at its base ; superior mandible longer than the inferior, slightly curved at its extremity ; inferior mandible straight, not hidden by the elongated margins of the superior : *Nostrils* nearly oval, open, situated nearer to the apex than to the base of the bill ; nasal fossæ long, covered by a membrane which is furnished with feathers : circumference of the eye naked : neck almost naked, furnished with a few scattered feathers : *Feet* large and strong, placed backward on the body ; tarsus thick and long ; toes four, much elongated ; the three front ones united at their base by a small membrane, which is more evident between the internal and middle toes than between this latter and the exter-

nal; the posterior toe horizontal, resting on the earth throughout its whole length: *Claws* very long, very slightly curved, triangular with the point obtuse, nearly like those of *Menura*: *Wings* moderate, concave, rounded; the third and fourth quill-feathers longer than the others: *Tail* small, wedge-shaped, scarcely extending beyond the wings, composed of twelve feathers.

*M. Freycinet*, Body blackish; bill fuscous, whitish at the apex; neck almost naked, blackish; feet of the same colour.—From Vaigiou and Boni, Islands of the New Guinea group.

*M. La Pérouse*, Body rufous; bill blackish, with the apex whitish; neck naked, rather yellow; tarsi rather yellow.—From Tinian, one of the Marianne Islands.

*Hæmatopus niger*, Body throughout black; flexure of the wings with an obtuse tubercle; bill red; feet rose-coloured.—This species, which was captured on Dirk Hatich's Island, is recorded as doubtful, it being always found in company with the common Oyster-catcher of New Holland.

*Chionis alba*, Forster; *Ch. necrophagus* of Vieillot.

*Podiceps Rolland*, Bill blackish; crest, lax, black; cheeks white; eyes bright red, shining; neck and pectus fuscous-blackish.—From the Falkland Isles.

*Procellaria (Puffinus) Berard*, Small, body blackish above, white beneath; bill black, spotted with white; feet lead-coloured.—From the Falkland Islands.

*Lestris Cattaractes*, Temm. Also from the Falkland Islands. It is the *Larus fuscus* of Brisson, and has long been known as the Port Egmont Hen of Cook's voyages.

*Anas brachyptera*, Lath.,—the *A. cinerea* of Gmelin, and the Race Horse of Wallis and Cook; also from the Falkland Islands.

In the succeeding chapter, M M. Quoy and Gaimard conclude the ornithological department of their work, by "Remarks on the Pelagic Birds, and on certain other Palmipedes, considered especially as regards their habits and their geographical distribution in the Oceans of the Globe." Many of these are extremely in-

teresting, especially the observations on the manners of the *Aptenodytes demersa*, which the navigators were compelled by the calls of hunger to study during their forced stay in the Falkland Islands. They also indicate several species of Albatrosses, and many of Petrels, which they were unable to describe accurately from the impossibility of procuring specimens, although the birds repeatedly approached so near as almost to touch the vessels. Notices obtained under such circumstances cannot of course possess sufficient exactness for the purposes of science, although affording valuable information to the navigator and the general reader. We are therefore under the necessity of passing them by, to proceed to the other orders of animals, which must, however, from the unavoidable length of the present article, be deferred until our next number.

---

*The Transactions of the Linnean Society of London.* Vol. xv.  
Part i.—4to. pp. 334.—Plates ii.

IN Zoological interest, the present portion of the Linnean Transactions is equal to any which it has previously fallen to our lot to analyse. Again it contains but a single botanical paper, the remainder of its pages being entirely devoted to the animal kingdom. If then our notice of its contents should on the present occasion be more brief than usual, it is only because we are compelled to limit its extent by the heavy arrear into which we have fallen. We have indeed less hesitation in sketching merely a rapid outline of a work, which will necessarily pass through the hands of almost every one of our readers, than we should have in curtailing our notices of foreign transactions, to which occasional access can alone be had.

The papers relative to the *Mammalia* are two in number. The first of them is a "Description of a new genus of the class *Mammalia* from the Himalaya chain of Hills between Nepaul and the Snowy Mountains: by Major-General Hardwicke." It refers to

the *Ailurus fulgens*, noticed in our analysis of the *Histoire Naturelle des Mammifères*, at page 419 of the last volume of the *Zoological Journal*. By the date prefixed to it, General Hardwicke's paper appears to have been read before the Society nearly six years since. The delay in its publication, which took place, it is stated, in consequence of the absence of its zealous authour from England, has enabled the Continental naturalist to anticipate it, and what should have constituted the original memoir now assumes the form of a supplementary notice. The additional information which it imparts is however of considerable value, as it describes the teeth which were wanting in the specimen examined by Mons. F. Cuvier, and which are preserved in that presented to the Linnean Society by General Hardwicke. On one peculiarity in the dentary system the authour chiefly rests the claim of the animal to generic distinction. The whole of the projecting points of the posterior grinders are truncated; an appearance, in his opinion, depending on original structure, and not produced by attrition. On this point however, considerable doubt may very reasonably be entertained. But without this there are discriminating circumstances amply sufficient to entitle it to the rank which has been assigned to it; those which separate it from *Nasua* and *Procyon* being particularly pointed out. The generic characters are illustrated by views of the teeth and of the feet of the animal.

The other paper in connection with the *Mammalia* is, a "Notice of a species of *Ursus* from Nepaul: by Dr. Horsfield." From the prevalent colour, it has been denominated *U. isabellinus*, and a specific character of it is given. Its habit is decidedly different from that of the other Bears from the same part of the world, which form the subgenera *Prochilus*, Illig., and *Helarctos*, Horsf. It rather resembles the Brown Bear of Europe, and is referable to the genus *Ursus* as now limited. The skin, which was presented to the Society by H. T. Colebrooke, Esq. was too imperfect to admit of a minute and detailed description.

The Ornithological Papers are four. Of these by far the most important is the "Description of the Australian Birds in the collection of the Linnean Society; with an attempt at arranging

them according to their natural Affinities:" by N. A. Vigors, Esq. and Dr. Horsfield. It is also the most extensive, occupying very nearly one half of the part. From characterizing it in the terms which it merits, the writer of this notice is precluded by the name of one of its authours being prefixed to the present volume. From analysing it, he is equally prevented by the multiplicity of interesting facts which it embodies. Although it includes only that portion of the collection which is referable to the *Raptores*, Illig., and the *Insessores*, Vigors, no less than one hundred and seventy-one species are described in it, fifty-six of which are regarded as new; several other new species obtained from various sources being also described in the notes. The number of forms which are either entirely novel, or so prominent as to require to be distinguished as genera from those previously established, is no less than twenty. It is chiefly among the very extensive families of *Muscicapidæ*, *Psittacidæ*, and *Meliphagidæ*, that these new generic divisions have been found to be necessary, and they are not only precisely characterized, but their connexions with, and their distinctions from, the approximating genera, are particularly pointed out. In this in fact consists the peculiar value of the paper; that the minor details, though finished with that technical accuracy which delights a namer of species, are throughout the whole of it made subservient to the more extensive views on the natural arrangement of the animal creation which have recently been advanced. In every instance a leading object has been to illustrate the affinities and analogies by which the important class *Aves* is connected together, and these are repeatedly shown to exist among the minor groups, to an extent equally striking as that among the higher divisions, which was explained by Mr. Vigors in the last part of the Transactions of the same Society. The Geographical Distribution of Birds is another subject which has also received special attention; and the peculiarities of New Holland are occasionally noticed, as affording sufficient reasons for the absence of certain families from its Fauna, and for the modification in others of various organs necessary to adapt them for the situation in which they have been placed. Considerable information relative to their manners has been obtained from Mr. Caley,

by whom the collection was chiefly formed, and also from Mr. Brown, and has been blended by the authours with their more scientific labours.

The "Description of two new Birds from Nepal: by Major-General Hardwicke," is of the *Lophophorus Wallichii*, and *Phasianus Gardneri*. The latter deviates from the characters of the typical *Phasiani*, by the bill being short, greatly rounded, and blunt at the apex; by the tail being shorter and rounded; and by the scales of the tarsi being more numerous and closer to each other. In these respects it agrees with *P. cruentus*.

An addition to our native Fauna is made by P. J. Selby, Esq., in his "Description of *Plectrophanes Lapponica*; a species lately discovered in the British Islands." It is the *Fringilla Lapponica*, Linn., and, together with the *F. nivalis*, deviates from the true Buntings. The natural station of the little group formed by these two birds, and distinguished as the genus *Plectrophanes* by Meyer, (*Passerina*, Vieill.), is shown to be intermediate between *Alauda* and *Emberiza*. It is connected with the former by means of the *Al. Calandra* and other species, in which the bill is increased in thickness; and resembles the latter in the form of the bill, which with the exception of being shorter and more rounded on the back, possesses the characteristic distinctions of that genus. In their modes of life these birds approach more nearly to the habits of the Larks. The description of the *Plect. Lapponica* is accompanied by a plate.

The "Catalogue of the Norfolk and Suffolk Birds; with Remarks: by the Rev. R. Sheppard, and the Rev. W. Whitear," is the only other paper connected with Ornithology. The list itself exhibits no peculiar novelty; but the remarks which accompany it are interesting, as they frequently refer to the habits of the birds, the seasons of their appearance and migration, their nests and eggs, and the modes adopted for their capture. The information on some of these points will doubtless appear valuable to the sportsman and the collector. The claim of several species to a place in our British catalogues is also authenticated by particular notices of the occasions on which they were obtained.

Of the Entomological articles, the first is of the very highest

importance. It is from the pen of W. S. MacLeay, Esq. "On the structure of the Tarsus in the Tetramerous and Trimerous *Coleoptera* of the French Entomologists." The facts which it develops are adapted to demolish the very foundation of the professedly natural arrangement of the *Coleoptera*, which has been so generally followed since its adoption by Latreille. Mr. MacLeay had long since pointed out many anomalies in the number of the joints of the tarsus, by which certain genera were apparently excluded from any of the sections to which the names of *Pentamera*, *Heteromera*, *Tetramera*, *Trimerera*, *Dimerera*, and *Monomera*, have been applied. The affinities of most of them were, it is true, so evident, as to enable the entomologist to place them at once in their appropriate situations; but in doing so he assumed the existence of a character which was not to be found in them, and even in some instances acted in open defiance of the system, as in the case of the genus *Heterocerus*, a tetramerous group, which he nevertheless continually arranged among the *Pentamera*. A system admitting and even requiring such extensive deviations from the principles on which it rests, must of necessity be erroneous; it is evidently not natural, and may be left to the fate of all artificial methods, to be employed or rejected as convenience dictates. Still more indisputably will this appear, when it is shown, as in the present paper, that no such section as the *Trimerera* exists in nature, and that the great majority of the *Tetramera* are in reality Pentamerous. A close examination of any Linnean *Cerambyx*, *Curculio*, or *Chrysomela*, will show, that its tarsi consist of five articulations instead of four, as assumed in the tarsal system of the French entomologists, the joint which they have described as terminal being in reality composed of two distinct pieces, the first of which is very small. The corresponding joint in the tarsi of the *Coccinellæ* will be found to be divided in a similar manner, and therefore what have been considered as *Trimerera*, are actually *Tetramera*. An arrangement grounded on data so erroneous cannot be natural, and it has here received a shock which it can scarcely withstand. The field is now thrown open for a better classification, founded on a more correct basis. We wait with impatience for its appearance. The exposition of

such a method has indeed been commenced in the *Horæ Entomologicæ*, and still further developed in the *Annulosa Javanica*. That the progress of the latter work should have been delayed, has always been a subject for regret, and it is the more to be lamented, since with its suspension, the views of many of its admirers are still kept unsettled. But we do hope, that either through its medium, or through some other channel, the system of Mr. MacLeay will be propounded to the minutest possible details. Even to those who still feel disposed to regard many of his views as merely speculative, the general explanation of them would doubtless be most acceptable.

The only other entomological paper, is the "Observations on the Crepitaculum, and the Foramina in the anterior Tibiæ of some Orthopterous Insects: by the Rev. Lansdown Guilding." The organ of sound in the male of the *Locusta camellifolia* is described as consisting of a strong ridge, furnished with hard and regular teeth, on the under surface of the left hemelytron, near its base; which is rubbed against by a bony process projecting from the right one. In those orthopterous insects which possess the crepitaculum at the base of the wing-cases, there is found a peculiar organ on the anterior tibiæ in both sexes; in the *Locustæ*, Fab., it is constituted by approximate suboval foramina, which are gibbous at the side; and in the *Achetæ*, by two opposite oval flattened openings, closed by a delicate membrane. A curious apparatus on the anterior tibiæ of many nocturnal *Lepidoptera*, particularly the *Sphingidæ*, is also mentioned. It is generally formed of an elongate velvet pad, which varies in shape and size, and is used, according to Mr. Guilding, to brush and cleanse the large eyes of these insects.

It now remains to mention only one other paper; a "Notice on a peculiar property of a species of *Echinus*: by E. T. Bennett, Esq." It states the occurrence in immense quantities on the western coasts of Ireland, of a species of *Echinus*, which forms for itself depressions in the rocks immediately above the low-water mark, and in which nearly two-thirds of the animal are constantly imbedded. The common *E. esculentus* is met with upon the same shores, but is never found in similar cavities. The species ap-



pears to be the *E. lividus*, Lam., and is perhaps synonymous with the *E. saxatilis*, Linn. It had never before been noticed as an inhabitant of the British Isles.

---

*Memoir on the Pentacrinus Europæus: a recent species discovered in the Cove of Cork, July 1, 1823. With two illustrative Plates.* By JOHN V. THOMPSON, Esq. F.L.S. 4to. p. 12.

AN extremely valuable notice of a very interesting animal. Numerous as are the fossil species of the *Crinoidea*, their real affinities remained unknown to us, owing to the imperfect state in which their solid parts alone occurred. It was equally impossible to determine the situation in nature of the only recent one which had yet been met with, the *Pentacrinus Caput Medusæ*, since of the five specimens which have been brought to Europe, not one had been preserved in spirits, and the soft parts, or rather the animal itself, had consequently been lost to the observation of intelligent naturalists. The discovery of a second recent species of so extraordinary a family, in itself a most desirable occurrence, becomes of far greater importance by establishing the fact that the *Crinoidea* are really *Radiata*, closely allied to the *Asteriæ*, and especially to the genus *Alecto* of Dr. Leach, (*Comatula*, Lam.). The description of the new species is given with the fullest detail, and is illustrated by two plates, which are very neatly executed. Its mode of growth is traced almost *ab ovo* up to its fullest development, which in the largest individuals that have occurred does not exceed three quarters of an inch in length; and our information on a very intricate subject is thus rendered almost complete. Our best thanks are due to the authour for thus employing to the advancement of science the advantages which he enjoys from the vicinity of his residence to the ocean; and we trust that he will continue to avail himself of the opportunities which must repeatedly occur to him of adding to our knowledge on many points which still remain enveloped in mystery. Of his future exertions we are induced to augur well, from the spirit and style of his commencement.

*Mineral Conchology of Great Britain ; or coloured Figures and Descriptions of those Remains of Testaceous Animals or Shells, &c.* By J. SOWERBY. Continued by J. D. C. SOWERBY, F.L.S. &c.— Nos. lxxxiv—xcvi.

IN the very long series which we have now to notice, are included the termination of the fifth volume of the *Mineral Conchology*, and upwards of one half of the sixth. The work is therefore hastening rapidly towards its completion, and will shortly furnish to the British student of this extensive department of natural knowledge, an almost perfect illustration of the objects of his research. On his gratitude it will possess claims equal to those which were earned for its original projector from another class of naturalists, by the publication of the “*English Botany*.” Like that standard work, the “*Mineral Conchology*” may be referred to even with a feeling of national pride; for no country, except England, has yet produced any publications which afford so ample a view of its natural possessions in either of those vast ranges of science. That two such works should have been the production of the same individual, is among the most extraordinary facts in the annals of Natural History. Respect for his memory, and admiration for his talents and perseverance, can never be effaced from the minds of those who are daily deriving assistance from his multifarious and well-directed labours.

In the present numbers the species figured and described amount to nearly two hundred, exhibiting examples of about fifty genera. Many of them are entirely new, and of the remainder the greater proportion are more completely illustrated than in any previous sketches. It would be impossible, without incroaching on greater space than can be allowed to us, to dwell on the numerous particulars which deserve remark. We must even refrain from pointing out the groups which have received especial attention, such as the *Gervillia*, Defrance, of which a new species is figured, in addition to the *G. aviculoïdes*, and the *G. solenoïdes*, the latter being the type of the genus. We may only venture to notice the two new genera proposed, referring so many of our

readers as are interested in the details, to the work itself, on the fidelity of which they are aware that the fullest reliance may be placed.

The first of these is distinguished by the name of *PACHYMYA*. It is thus characterized; "Shell bivalved, transversely elongated, very thick, sub-bilobate, with the beaks near the anterior extremity. Ligament partly immersed, attached to prominent processes, or fulcra." It bears a considerable analogy to *Modiola* in the position of the beaks, the elongated form of the valves, and the partial separation of the anterior portion into an imperfect lobe. From the thin shells which are allied to *Mytilus*, it is distinguished by its comparatively short ligament fixed upon a strong prominent part of the shell within the edge, utterly unlike their linear ligaments affixed to the narrow margins themselves. It is founded on a species from the lowest part of the Chalk formation near Lyme Regis, to which the trivial name of *P. Gigas* has been given. It appears probable that other fossil shells, hitherto described as *Modiolæ*, will, when better known, be found to belong to this genus.

The other new genus is also founded on a bivalve shell. It is denominated *THETIS*, "An equivalved subequilateral bivalve; more or less orbicular, and convex; ligament marginal; three or four small acuminate teeth about the hinge; the line of attachment of the mantle? has a deep sinus extending nearly to the beak; muscular impressions rounded, small, distant from the hinge. Ligament external." It differs from *Maetra* by the absence of remote teeth, and by the want of an internal ligament; and from *Tellina* by its margin not being curved laterally. The fossil shells composing it have frequently been referred to *Venus*, but are totally distinct. They exhibit no lunette, nor other external mark. Two of them are figured under the names of *T. major*, and *T. minor*; the former is from the Sandstone of the Greenstone formation, in various localities, and the latter from the Greensand itself.

---

*The Genera of Recent and Fossil Shells: by G. B. SOWERBY, F.L.S., with original Plates by J. D. C. SOWERBY, F.L.S., No. xxix.*

OF the seven genera illustrated in the present number, one alone requires particular notice. In our last analysis we gave the characters of the two new genera proposed by Mr. Broderip to be removed from the *Volutæ*, Lam.; we have now to exhibit those by which he circumscribes the remaining species under the generic name *Voluta*. They are as follows: “*Testa* subovata, coloribus plerumque variis eximiè picta. Apex papillaris. Columella plicata, plicis inferioribus maximis, basi emarginata. Epidermis tenuis, fusca. *Animal* carnivorum. Caput tentaculis duobus instructum. Oculi ad tentaculorum basin externam appositi. Pes maximus. Operculo caret. Habitat marinum in calidioribus mundi veteris regionibus, rarior in Indiis occidentalibus.” It is necessary to mention that the description of the animal is not drawn from actual observation, but rests solely on the affinity presumable from the close resemblance of the shell of *Voluta* to that of *Melo*. The numerous species which are still included under this generic appellation, are shown to be divisible into five sections, several of which admit of farther subdivision. Some of the sections, in Mr. Broderip’s opinion, will hereafter assume the rank of genera.

A very brief notice of the other genera will suffice. *Dolium*, *Terebra*, and *Teredina*, are employed in their common acceptation. *Xylophaga* and *Mulleria* are also used in the sense given to them by their original describers; the former having been applied by Dr. Turton to designate his *Teredo dorsalis*, an uncommon and curious inhabitant of our own coasts; and the latter by De Ferussac to an extremely interesting group, which had been confounded with *Ætheria*, but which apparently connects that genus with the irregular marine bivalves, *Ostrea* for example, No more than one species of *Mulleria* has yet been detected, and this is so extremely rare, that only three specimens of it are known to exist. The one figured is from the collection of Mr. J.

Sowerby. The remaining genus, *Teredo*, is extended in its signification so as to embrace also the *Septaria*, Lam., and the *Fistulana gregata*, of the same authour.

---

*British Entomology; or Illustrations and Descriptions of the Genera of Insects found in Great Britain and Ireland.—By JOHN CURTIS, F.L.S. Nos. xxv—xxxvi. (Vol. iii.)*

ON the beauty and fidelity of the plates which form the most prominent feature of this work, it is unnecessary for us again to remark, after the repeated testimonies which we have felt ourselves called on to advance in their favour. The utility of the accompanying letter-press requires also no further praise from us. They have jointly attracted the attention of the scientific world to an extent sufficiently great to ensure the continuance of the publication with that regularity which has marked its progress since its commencement. To notice its numbers as they successively appear can now no longer be necessary, and our future analyses will therefore be directed, like the present, to an entire volume, the produce of a year.

In this third volume the authour has, as usual, illustrated forty-eight of the genera of Insects found in the British Islands. Of these a considerable proportion were unnoticed by any previous writer of our own country, and among the species figured about one half were unrecorded in our printed entomological catalogues. Many of them are moreover entirely new, having never before been either figured or described. They are divided nearly equally between the two great classes, *Mandibulata* and *Haustelata*, and embrace examples of seven of the orders. The greater number are of course taken from the *Coleoptera*, as in this order the genera have been more subdivided than in any other. Seventeen of these are described, the whole of which had been before indicated; although several of them had not received those scientific definitions which are here given. *Helobius* and *Bledius* may be referred to as instances; the former being illustrated by the

*H. Gyllenhalii*, an insect which has not yet occurred south of the Tweed,—and the latter by the *B. Skrimshirii*, described in our last number by Mr. Westwood, under the name of *B. Stephensii*. The Hymenopterous genera are seven in number, and also present no striking novelty to the general student, although several of them were previously unknown to the English Entomologist. The single genus of *Neuroptera* figured, is extremely interesting. It is the *Boreus*, Lat., and is founded on the *Panorpa hyemalis*, Linn., an extraordinary insect, which was first added to our Fauna by Dr. Leach.

The new genera proposed are entirely confined to the *Lepidoptera*, twelve of which are illustrated in the volume before us. Of these four are now for the first time distinguished. The first of them, CHARISSA, is closely allied to *Cleora*, from which it is distinguished by the short pectinations of the antennæ of the males, which give to them a robust and compressed appearance. It includes the *Geometræ serotinaria*, *pullaria*, and *obscuraria*, together with the *C. operaria*, which is figured as the type, and is new to Britain.

ALCIS, the second new genus, may be distinguished from *Bupalus*, by the males being invariably smaller than the females, the eyes being larger and more distant in front, the palpi more porrected, shorter, and not hairy, the maxillæ very long, and the antennæ not pectinated to the apex. Its type is the *Geometra repandaria*, Linn. Eleven British species are enumerated as contained in it, three of which, including the *A. sericearia*, which is figured, were previously undescribed.

Analogous to *Alcis*, in that section of the *Phalænidæ*, in which the antennæ of the males are simple, is the third new genus, MACARIA. Of this the *Phalæna liturata* is figured as the type. It includes six other British species, among which are the *P. prænotata*, *P. notata*, &c.

The remaining new genus is divided from the *Tortrices* under the name of CNEPHASIA. The wings of these insects are folded very differently from those of the other species of the family, bearing in this respect a stronger affinity to the *Crambi*. Its type is the *Phalæna Logiana*, Linn., and it includes eight other British

species, three of which were unnoticed by systematic writers. One of these latter, the *C. bellana*, which was captured at Edinburgh by Mr. Curtis, has been selected to illustrate the genus.

The genera of *Diptera* figured, are eight in number, several of them being new to the English reader, and most of the insects being also unknown to our catalogues. The single Apterous genus, *Pulex*, is illustrated by an hitherto undescribed species, that of the Mole, which is the largest that has yet been observed. The dissections which accompany this figure, are given with extreme care and minuteness. They are taken from the *P. irritans*, in which, as in the greater number of the species, no antennæ are visible. In a subsequent number the position and structure of these organs in the *P. Hirundinis*, are pointed out; an important addition to our knowledge of the *Aptera*, among which it appears not improbable that several groups may hereafter be satisfactorily established. The two Omalopterous genera, *Craterina* and *Melophagus*, founded on the parasites of the Swallow and the Sheep, have also received especial attention. In the remarks on the former, the general structure of the insects of this order is explained, and the dissections of the trophi are more than usually elaborate.

---

ART. XXXI. *Proceedings of Learned Societies on subjects connected with Zoology.*

---

ROYAL SOCIETY.

March 2, 1826.—A paper was read, *On the coagulation by heat of the fluid blood in an aneurismal tumour*; by Sir E. Home, Bart. V.P.R.S.

March 16.—N. A. Vigors, Esq. F.L.S. was admitted a Fellow of the Society.

April 13.—R. I. Murchison, Esq. Sec. G.S. was admitted a Fellow of the Society.

April 20.—A paper was read, entitled, *A formula for expressing the decrement of human life*; by Thomas Young, M.D. For. Sec. R.S.

May 11.—A paper was read, *On the production and formation of pearls*; by Sir E. Home; and the reading was commenced of a paper *On burrowing and boring marine animals*; by Edward Osler, Esq. communicated by L. W. Dillwyn, Esq. F.R.S.

May 25.—Dr. A. P. Wilson Philip was admitted a Fellow of the Society; and the reading of Mr. Osler's paper was concluded.

June 15.—A paper was read, entitled, *Case of a lady born blind, who received sight at an advanced age by the formation of an artificial pupil*; by James Wardrop, Esq.: communicated by Sir H. Davy, Bart. P.R.S.

Papers were also read, *On the crystallization of uric acid*; by Sir E. Home: and *On the muscular fibre of the Elephant*; by H. Mayo, Esq., in a letter to Sir E. Home.

Nov. 16.—Lieut. Col. D. Denham was admitted a Fellow of the Society, and *The Croonian Lecture*, by Sir E. Home, was read. The subject was an enquiry into the mode by which the propagation of the species is carried on, in the common oyster, and in the large fresh-water muscle.

Most of the above-mentioned papers will be found printed in the Philosophical Transactions for 1826, part iii., and 1827, part i.

Nov. 23.—Charles Bell, Esq. F.L.S. was admitted a Fellow of the Society.

Nov. 30.—This being St. Andrew's Day, the Anniversary Meeting of the Society took place.

In the list of Fellows deceased since the last Anniversary, occurred the name of Sir T. S. Raffles, whose character was eulogized by the President, Sir H. Davy, in the following terms:

“ Occupying high situations in our empire in the East, he employed his talents and his extensive resources, not in the exercise of power or the accumulation of wealth, but in endeavouring to benefit and to improve the condition of the natives, to fix liberal institutions, and to establish a permanent commercial intercourse between the colonies in which he presided



and the mother country; which, while it brought new treasures to Europe, tended to civilize and to improve the condition of the inhabitants of some of the most important islands of the East. Neither misfortune nor pecuniary losses damped the ardour of his mind in the pursuit of knowledge. Having lost one splendid collection by fire, he instantly commenced the formation of another; and having brought this to Europe, he made it not private, but public property, and placed it entirely at the disposition of a new Association for the promotion of Zoology, of which he had been chosen President by acclamation. Many of the Fellows of this Society can bear testimony to his enlightened understanding, acute judgment, and accurate and multifarious information; and all of them must, I am sure, regret the premature loss of a man who had done so much, and from whom so much more was to be expected, and who was so truly estimable in all the relations of life."

The Society afterwards proceeded to the election of the council and officers for 1827, when on examination, the following was found to be the state of the lists. Eleven members of the old council to remain members of the new council:—

Sir Humphry Davy, Bart.; John Barrow, Esq.; The Lord Bishop of Carlisle; Davies Gilbert, Esq. M.P.; John F. W. Herschel, Esq. M.A.; Sir Everard Home, Bart.; Captain Henry Kater; John Pond, Esq. A.R.; James South, Esq.; W. Hyde Wollaston, M.D.; T. Young, M.D.

The members elected into the council:—

John Abernethy, Esq.; Charles Babbage, Esq. M.A.; Captain Francis Beaufort, R.N.; Robert Brown, Esq.; John George Children, Esq.; Charles Hatchett, Esq.; A. B. Lambert, Esq.; William Viscount Lowther; George Pearson, M.D.; William Prout, M.D.

The following were elected officers of the Society:

*President*, Sir Humphry Davy, Bart.; *Treasurer*, Davies Gilbert, Esq. M.P.; *Secretaries*, J. F. W. Herschel, Esq. M.A.; John G. Children, Esq.

January 25, 1827.—The name of Professor Jameson was ordered to be inserted in the printed lists of the Society.

Feb. 1.—A paper was read, entitled, *Account of a new genus of serpentiform sea-animals*; by J. Harwood, M.D., F.L.S., Professor of Natural History in the Royal Institution: communicated by Daniel Moore, Esq. F.R.S.

Feb. 8.—A paper was read, entitled, *An Examination into the Structure of the Cells of the Human Lungs, with a view to ascertain the office they perform in Respiration*; by Sir E. Home, Bart., V.P.R.S. Illustrated by microscopical observations, by F. Bauer, Esq., F.R.S.

These papers will be found published in the first part of the Philosophical Transactions for 1827.

March 1.—Dr. J. C. Prichard was admitted a Fellow of the Society, and a paper was read, entitled, *On the structure and use of the submaxillary odoriferous gland of the Crocodile*; by Thomas Bell, Esq. F.L.S.; communicated by Sir E. Home, Bart. V.P.R.S.

Beneath the lower jaw of the Alligator and the Crocodile, on each side, is situated a gland which secretes an unctuous substance of a strong musky odour. About two years since, the authour of this paper discovered in it a structure which is without parallel in the glandular system of other animals. His observations were made on the common American Alligator. In this animal the external orifice of the gland is situated about two-thirds of the length of the lower-jaw backwards from the symphysis, being a longitudinal slit a little within the lower edge of the basis of the jaw, through which exudes the substance just mentioned. During warm weather, when the animal feeds freely, the secretion is copious; but in winter it is much diminished in quantity and is less powerful in scent. The gland itself is a simple follicle of an elongated pyriform figure, lying between the skin and the under surface of the tongue. In an Alligator of four feet in length, it is about half an inch long and one sixth of an inch in diameter. This gland is enveloped by extremely fine and delicate muscular fibres, disposed obliquely, consisting of two fasciculi passing repeatedly over and under the gland,

which unite at its base into a long and slender round muscle, closely attached to the corner of the os hyoides, and following the course of another muscle apparently identical with the *mylo-hyoïdeus* in the mammiferous animals. The use of the muscle appears to be to bring the gland into a proper position for its discharge, and then to operate the discharge, by pressure.

The authour, considering the situation of the gland near the mouth of the Alligator, and the predatory habits of the animal, together with its voracity of fish, and the well-known partiality of fish for odoriferous oils and extracts, conceives, that this secretion acts as a bait, attracting the fish to such a position as will enable the Alligator readily to seize them, in his usual way of seizing his prey, by snapping side-ways at them.

The reading was also commenced of a paper, entitled, *Note on the chemical composition of two liquids lately proposed as powerful disinfectants, and on the action of those liquids on putrid animal matter*; by A. B. Granville, M.D. F.R.S.

March 8.—The reading of Dr. Granville's paper was concluded.

March 15.—M. Scemmering was elected a Foreign Member of the Society.

May 10.—A paper was read, entitled, *On the change in the plumage of some Hen-Pheasants*; by W. Yarrell, Esq. F.L.S.; communicated by W. Morgan, Esq. F.R.S.

The last shooting season having been unusually productive of Hen Pheasants, which have assumed more or less the plumage and appearance of the male, much discussion has in consequence arisen on the cause of this change; and the authour, having had many opportunities of examining the facts, as respecting both the pheasant and the domestic fowl, was induced to notice the internal peculiarities which unvariably accompany this transformation. According to an opinion of John Hunter and of Dr. Butter, this change only takes place at an advanced age; but Mr. Yarrell considers the facts in his possession as at variance with this idea, and that the appearances in question may occur at any period of life, and may even be produced artificially. In all the instances examined by him the sexual organs were found diseased, and to a greater or less extent in proportion to the

change of plumage. The ovarium was shrunk, purple, and hard ; the oviduct diseased, and the canal obliterated at the upper part, immediately preceding its funnel-shaped enlargement at the bottom of the ovarium. Having opened a Hen-Pheasant in her natural plumage, for the sake of comparison, he found a similar diseased state of the organs to exist ; thus proving that the disease must exist some time before the corresponding change of feather takes place. He observes, that it is no uncommon thing to find among numerous broods of pheasants reared by hand, some females, which, at the age of only four months, produce the brightest plumage of the male : and in two instances of birds shot in a wild state, the nest-feathers had not been shed, proving them to have been birds of the year.

A Partridge, having a white bar across the breast, and the first three primaries in each wing white, being opened, exhibited the same sort of organic disease ; and, from circumstances adduced, it appears that this was also a bird of the year.

But all variations in plumage are not traceable to this cause. In most of the excepted instances, however, the individuals are dwarf birds ; and the authour attributes their variety of plumage to defective secretion—the effect of weakness.

When the sexual organs are artificially obliterated in the common fowl, so soon as the operation is performed in the male bird, he ceases to crow, the comb and gills do not attain their full size, the spurs remain short and blunt, and the feathers of the neck assume an appearance intermediate between the hackled character of the cock and the ordinary web of the hen. When the oviduct of the female is obliterated, the ova cease to enlarge ; she makes an imperfect attempt to crow ; the comb increases in size, and short and blunt spurs make their appearance. The plumage alters in colour and in form, approaching to that of the cock ; the bones of the lower part of the back also never acquiring the enlargement requisite for giving a proper breadth to the pelvis. In short, the two sexes approximate so nearly in character by this process, that it frequently becomes difficult to determine the sex.

Hen-Pheasants assume the plumage of the male at best but

imperfectly, and it is probable that they do not live many years after the change.

It appears to be a general law, that where the sexes of animals are indicated by external characters, these undergo a change, and assume a neutral appearance, whenever original malformation, subsequent disease, or artificial obliteration, has deprived the sexual organs of their true influence,

May 31.—Dr. J. Harwood, Professor of Natural History in the Royal Institution, was admitted a Fellow of the Society; and a paper was read, *On the effects produced on the air-cells of the lungs when the circulation is too much increased*; by Sir E. Home.

On the 21st of June, the Society adjourned over the long vacation, to meet again on the third Thursday in November next.

---

LINNEAN SOCIETY.

April 18, 1826.—A paper was read, entitled, *Observations on a species of Simia, Linn., now alive in the collection of Exeter*; Change, allied to, if not identical with, the *Simia Lagothrix* of Baron Humboldt; by Edward Griffiths, Esq. F.L.S.

May 2.—A paper was read *On the Locusts*, (*Grillus migratorius*,) which devastated the Crimea and the southern provinces of Russia, in 1824; by J. Smirnov, Esq. F.L.S. Secretary to the Russian Embassy.

May 25.—This day being the birth-day of Linnæus, the Anniversary was held as usual, Sir J. E. Smith, President, in the Chair, when the following Fellows were chosen as Officers and Council for the ensuing year:—

*President*, Sir James Edward Smith, M.D. F.R.S. &c.

*Vice-Presidents*, Samuel Lord Bishop of Carlisle, LL.D. V.P.R.S., F.A.S.; A. B. Lambert, Esq. F.R.S. A.S. & H.S.; W. G. Maton, M.D. F.R.S. & A.S.; and Edward Lord Stanley, M.P. F.H.S.

*Treasurer*, Edward Forster, Esq. F.R.S. & H.S.

*Secretary*, James E. Bicheno, Esq.

*Assistant Secretary*, Richard Taylor, Esq. F.S.A. Mem. Asiat. S.

Also to fill the vacancies in the *Council*: Charles Bell, Esq. F.R.S. Ed.; John Bostock, M.D. F.R.S. Pres. Geol. Soc; Sir Stamford Raffles, F.R.S., Pres. Zool. Soc.; Joseph Sabine, Esq. F.R.S. & A.S. Sec. Hort. Soc.; and N. A. Vigors, Esq. M.A. F.R.S., Sec. Zool. Soc.

June 6.—A paper was read, *On a new genus of Insects named Oiketicus*; by the Rev. L. Guilding, B.A. F.L.S.

A paper was also read, entitled, *On Methods and Systems in Natural History*; by J. E. Bicheno, Esq. Secretary L. S. in which the authour endeavoured to show the different uses to which they should respectively be applied. The chief object of the Artificial system, he insisted, was to analyse; that of the Natural system, to synthesise. The business of the one is to enable us to ascertain particulars; and of the other, to combine those particulars so as to assist the mind to reason generally. Systematists in general, he contended, have confounded these two distinct objects, and have attempted to employ their natural systems equally with a view to determine species as to combine them, while their chief object should have been to find resemblances and common characters. The state of science seems to require that the work of combination should be more studied; and that instead of breaking down the productions of nature into the smallest particulars, we should act more philosophically if we endeavoured to discover the common characters of her groups, and to unite species; and thus furnish the ordinary reader with materials of knowledge, relieve his memory, and abridge his labour. This seems to be the more necessary in the present day, when the number of described birds amounts to 5000, of insects to 100,000, and of flowering plants to 50,000.

June 20.—The following papers were read:

*Concise notice of a species of Ursus from Nepaul, a skin of which has been presented to the Linnean Society by H. T. Colebrooke, Esq. F.R. & L.S. &c.*; by Thomas Horsfield, M.D. F.L. & G.S.

*Description of a new British Freshwater Helix*; by the Rev. Revett Sheppard, M.A. F.L.S.

*Of the term Oistros or Oestron of the ancients, and of the real insect intended by them in this expression*; by Bracy Clerk, F.L.S.

Nov. 7.—Joseph Woods, Esq. was elected a member of the Council, in the stead of Sir T. S. Raffles, deceased.

Nov. 21.—The reading was commenced, of a paper, entitled, *Remarks on the comparative anatomy of certain birds of Cuba, with a view to their respective places in the system of Nature, or their relations with other animals*; by W. S. MacLeay, Esq. F.L.S.

Dec. 19.—The reading of Mr. MacLeay's paper was continued.

Feb. 6. 1827.—A paper was read, entitled *Observations on the Tracheæ of Birds, with descriptions and representations of several not hitherto figured*; by William Yarrell, Esq. F.L.S.

The extraordinary structures described by the authour, are that of the crested Pintado of Africa (*Numida cristata*, Pall.), the Demoiselle, the Stanley Crane, the Black Swan of New Holland, and other swans, geese, and ducks. It was remarked that all birds with a complex structure of trachea have loud harsh voices, while the simple forms belong to the delightful song-birds. The paper concluded with an arrangement of the British species of the Duck family.

Feb. 20.—A description of a new species of Bat, from the Illinois, by Bracy Clark, Esq. F.L.S. was read; and the reading of Mr. W. S. MacLeay's paper *On certain Birds of Cuba* was continued.

March 6.—A paper was read, *On two new genera of Land Tortoises*; by Thomas Bell, Esq. F.L.S.

These genera possess a peculiar interest as exhibiting the affinities by which the freshwater tortoises are connected with those inhabiting the land. Mr. Bell has named them *Pyxis* and *Kinyxis*; and both are distinguished by a moveable joint, one in the sternum, and the other in the hinder part of the back, by means of which the shell can be completely closed. The species described are *Pyxis arachnoides*, a perfect land-tortoise, with the anterior lobe of the sternum moveable, and as capable of accurately closing the shell as any species of the freshwater box-tortoises: *Kinyxis castanea*: and *Kinyxis Homiana*, a species forming a passage from the group of *Testudinidæ* to that of the *Emydidæ*.

*March 20.*—Among the presents to the Society, announced at this meeting, was that of a collection of birds from New Holland, sent by Alexander MacLeay, Esq. Secretary of the Colony, and formerly the much-respected Secretary of this Society. The reading of Mr. W. S. MacLeay's paper was further continued; which also occupied the meetings on *April 3 and 17.*

*May 1.*—An extensive collection of New-Holland Birds and Quadrupeds was presented by Sir John Jamieson.

The following gentlemen were elected Foreign Members of the Society: Henry Ducrotay de Blainville; C. L. Bonaparte, Prince of Musignano; Leopold von Buch; Viscount Henry de Cassini; Henry Frederic Link, M.D.; C. F. P. von Martius, M.D.; C. G. Nees von Esenbeck, M.D.; Ch. Asmund Rudolphi, M.D.; M. Auguste de Saint-Hilaire; Frederick Teidemann, M.D.

*May 24.*—The Anniversary was held on this day, as directed in the Charter, at the Society's house, A. B. Lambert, Esq. V. P. F.R.S., in the chair; when the Fellows named below were chosen Officers and Council for the year ensuing:—

*President:* Sir James Edward Smith, M.D. F.R.S., &c.—  
*Vice-Presidents:* Samuel Lord Bishop of Carlisle, LL.D. V.P.R.S. F.A.S.; A. B. Lambert, Esq. F.R.S. A.S. & H.S.; W. G. Maton, M.D. F.R.S. & A.S.; and Edward Lord Stanley, M.P. F.H.S.—  
*Treasurer:* Edward Forster, Esq. F.R.S. & H.S.;—*Secretary,* J. E. Bicheno, Esq. F.R.S. *Assistant-Secretary:* Richard Taylor, Esq. F.S.A.: also to fill the vacancies in the *Council;* Arthur Aikin, Esq. V.P.G.S.; John Barrow, Esq. F.R.S.; Francis Boot, M.D.; Mr. George Loddiges, F.H.S; and Richard Waring, M.D.

*June 5.*—A paper was read, entitled, *Observations and experiments made with a view to ascertain the means by which the Spiders that produce gossamer effect their aerial excursions;* by John Blackwall, Esq. F.L.S., of Crampsall Hall, near Manchester.

After noticing that in the absence of accurate observation the ascent of gossamer spiders through the atmosphere had been conjecturally ascribed to several causes, such as the agency of winds, evaporation, electricity, or some peculiar physical powers of the animals, or from their webs being lighter than the air, Mr. Blackwell states that the ascent of gossamer takes place only in



serene bright weather, and is invariably preceded by gossamer on the ground. He then details the phænomena of a remarkable ascent of gossamer, October 1, 1826, when, a little before noon the ground was everywhere covered with it, the day being calm and sunny. A vast quantity of the fine shining lines were then seen in the act of ascending, and becoming attached to each other in various ways in their motion, and were evidently not formed in the air but on the earth, and carried up by the ascending current caused by the rarefaction near the heated ground; and when this had ceased in the afternoon, they were perceived to fall. An account is added of two minute spiders that produce gossamer, and of their mode of spinning, and particularly when impelled by the desire of traversing the air, they climb to the summits of various objects, and thence emit the viscous thread in such a manner as that it may be drawn out to a great length and fineness by the ascending current, until, feeling themselves sufficiently acted upon by it, they quit hold of the objects on which they stood, and commence their flight. Some of these animals, which were taken for the purpose of observation, when exposed to a slight current of air, always turned the thorax to the quarter from whence it came, and emitted a portion of glutinous matter, which was carried out into a line.

June 19.—Descriptions were read *Of two quadrupeds inhabiting the South of Africa, about the Cape of Good Hope; by Andrew Smith, M.D. Superintendent of the South-African Museum.*

The first of these is the Strand Wolf or Strand Jut of the colonists; and is named by the authour *Hyæna villosa*. Some of its habits are noticed in confirmation of the conjectures of Professor Buckland, with regard to the habits of the Kirkdale hyænas.

An account was also read *Of a pair of hinder hands of an Orang outang of unusual size, deposited in the collection of the Trinity House, Hull; by J. Harwood, M.D. F.L.S., &c.*

In this paper the authour corrects the statements of Dr. Abel respecting the height of the Orang outang; and maintains that the Pongo is not the *Simia Satyrus*, Linn., as supposed by Cuvier

and others, but that it is in reality a distinct species. The Pongo at the College of Surgeons has five caudal vertebræ, while all the skeletons of *Simia Satyrus* have but four: there are also material differences in the cranium and scapulæ.

The Society then adjourned over the long vacation, to meet again on Tuesday, Nov. 6.

---

ZOOLOGICAL CLUB OF THE LINNEAN SOCIETY.

March 14 & 28, 1826.—A paper was read, entitled *Observations on the ends proposed in Natural History by the use of artificial and natural methods*; by J. E. Bicheno, Esq. Sec. L.S.

April 11.—The Secretary read *A description of some new species of Phasianidæ*, by Major Gen. T. Hardwicke, F.R. & L.S.

April 25.—A discussion took place on the principles of arrangement in Natural History.

May 9.—Mr. Vigors gave a description of the species of the New-Holland genus *Meliphaga*, and pointed out the sectional subdivisions of the genus, as they more or less accorded with the typical characters.

May 28.—A paper by Mr. Yarrell, on the tracheæ of birds, was read, of which an account will be found in our report of the proceedings of the Linnean Society.

June 13.—Mr. Vigors resumed the discussion which had taken place among the Members of the Club, on the 14th and 28th of March, and the 11th and 25th of April; making a particular reference to the views of arrangement which had been promulgated in this country by the publication of the "*Horæ Entomologicæ*." He endeavoured to prove that the views exhibited in that work were improvements, not innovations, upon those which had previously existed, and were commensurate with, and rendered necessary by, the increasing information of the age. He adverted to the confusion which had arisen in Zoology by the indiscriminate use of the terms *natural* and *artificial Systems*; contending that, philosophically speaking, there is but one *natural system*,—the System of the Universe as originally planned by the Creator,—and that all systems of arrangement introduced by man are purely artificial, and are merely symbolick representations by which the naturalist

endeavours to communicate his ideas respecting the groups of nature. He thence proceeded to combat the most apparently serious objection which had been brought against the mode of arrangement adopted in the "*Horæ Entomologicæ*," viz. that it restricted nature, by proving that all such artificial and symbolick representations must be equally liable to the same objection, and that in point of fact, there is no other mode by which we can communicate our ideas in Natural Science. He hence insisted, that the question respecting the comparative merits of the different arrangements proposed by naturalists was not to be determined by the consideration of their being more or less artificial or natural, or more or less restrictive, but by the fact of their being more or less suited to the purpose at which they aimed,—namely that of communicating our knowledge of the groups of nature. Applying this rule to the arrangement adopted in the "*Horæ Entomologicæ*," he pointed out the superior advantages of a circular disposition and a quinary division in illustrating the affinities and analogies of groups. He showed that whereas the linear series, or that which has hitherto been chiefly in use, serves to point out the affinities of a group to two other groups only,—i. e. to those which respectively precede and succeed it,—the circular disposition points out at once the immediate affinity of the same group to several others, and at the same time its greater or less approximation to every other group in existence. With respect to the quinary division he equally evinced the necessity of it for the purpose of pointing out the analogies of nature. If parallel analogies are to be clearly exhibited, which he contended ought to be one of the chief objects of the naturalist, the number of divisions in every group must be definite. While he argued that such a division ought to be adopted even were it to be considered but an arbitrary mode of illustrating analogies, he asserted that as far as his own experience extended, he found that in every group where sufficient prominency of character prevailed for subdivision, and where no chasm intervenèd in the chain of affinities, the number of subordinate groups of equal value universally amounted to five.

Mr. Brayley, Jun. in corroboration of the justice of the aforesaid

views, referred to the prevalence of the same principle in the sciences of Chemistry and Mineralogy: and he promised to enter more at large into the subject at the ensuing meeting.

June 27.—Several species of birds which had been collected by Mr. W. S. MacLeay in the neighbourhood of the Havana were exhibited by the Secretary, among which were some undescribed species of Mr. Swainson's manuscript genus *Colaptes*, and some interesting species of *Loxiadæ*.

Mr. Brayley commenced the reading of a paper *On the existence of a quinary division, and a circular succession of affinities among simple Mineral-substances; with observations on the affinities and analogies of various subjects in Geology and Meteorology.*

November 14.—The Secretary exhibited specimens of three species of *Reptiles*, and two of *Bats*, recently sent from the Island of Cuba by Mr. W. S. Mac Leay. Dr. Horsfield stated that one of the *Bats* was referable to the genus *Nyctinomus*; the species he was not at the moment enabled to ascertain.\* Of the *Reptiles*, Mr. Bell observed that one was a species of the genus *Amphisbæna*, previously unknown to him; and that the others belonged to the genus *Anolis*, one of them being the *A. principalis*, and the other probably a new species.†

Mr. Westwood being called upon by the Chairman, exhibited specimens of the *larvæ*, of the wood perforated by them, of the *pupæ*, and of the *imago* of *Xiphydria Dromedarius*, collected by A. Cooper, Esq. The *larvæ* and *pupæ* appear to have been hitherto unknown.

A letter from Barron Field, Esq. F.L.S. inclosing a communication from M. Guimard, one of the naturalists of the late expedition under M. Freycinet, was read. The communication of M. Gaimard was afterwards read, in which that gentleman announces the discovery, in the Straits of Gibraltar, of a new family of the class of *Mollusca*, the *Diphides*, and of ten new genera, which had been named *Briarée*, *Calpe*, *Abyla*, *Nacelle*, *Enneagone*, *Cuboide*, *Hippopode*, *Rosacée*, *Flèche*, and *Astroide*. Of these, he states that he has forwarded descriptions and specimens to the Academie des Sciences.

\* See the present Number, p. 236.

† Ibid. p. 235.

The Secretary read the commencement of a paper, entitled *Remarks on the Comparative Anatomy of certain Birds of Cuba, with a view to their respective places in the System of Nature, or to their relations with other animals*; by W. S. MacLeay, Esq. M.A. F.L.S. &c.

November 28.—The Secretary read *The description of a new species of Bledius*, Leach; communicated to him by Mr. Westwood. This insect, which was found on the sea shore in Norfolk, Mr. Westwood proposed to call *Bledius Stephensii*. Its characters are as follows: *B. niger, nitidus, profundé punctatus, pedibus rufo-piceis, elytris flavo-ferrugineis basi suturâque nigris, thorace masculo cornu elongatâ, apice hirsuto, anticé in medio armatâ, capiteque ejusdem sexus cornubus duobus erectis elongatis.\**

The Rev. Mr. Kirby exhibited specimens of the *Cremastocheilus castaneus*, Knoch, of a second species described by himself in the Zoological Journal, and of a third hitherto unnoticed. He also exhibited specimens of three species of a new genus of *Rutelidæ*, to which he proposed to give the name of *Cnemida*; and of a new species of *Trichius*, the *T. Bigsbyi*. The whole of the above Insects are natives of North America.†

The Secretary read a continuation of Mr. MacLeay's paper on the Birds of Cuba.

December 12.—Mr. Yarrell exhibited several Sandpipers killed in England, some of which were new as British species. Among them was an immature specimen of the *Kentish Plover*, *Charadrius Cantianus*, Lath., obtained last autumn from the coast of Norfolk. This bird was considered by Montagu, as the young of the *Ring-Plover*, *Ch. Hiaticula*. To show that this opinion was erroneous, the specimen was contrasted by Mr. Yarrell with a young *Ring-Plover*, of the same age. The various markings of both were pointed out and compared. The whole length of the *Ring-Plover* exceeded that of the *Kentish Plover* by one inch, and from the point of the shoulder to the extreme end of the first wing primary, by three-quarters of an inch. The differences in form, as well as in the colour of the legs and toes of both, at various ages, were also adverted to. The remark of M. Temminck,

\* See No. XI, p. 61.

† See the present Number, p. 145.

that the *Kentish Plover* is very abundant in England, was noticed as incorrect: the *Kentish Plover* is a rare British bird, and few specimens are to be found in our collections.

Mr. Yarrell then contrasted three specimens of the *Tringa Temminckii*, Leisler, in different states of plumage, (viz. that of winter, summer, and a young bird,) with various specimens of the *Tringa Minuta* of British authors, and pointed out the differences between these diminutive Sandpipers, as given by Temminck. The short tarsi of the *Tringa Temminckii* are an obvious distinction between the species. The habits of the two birds were stated to differ materially. The *Tringa minuta* is found on the sea shore in company with the Purre and the Sanderling; the *Tringa Temminckii* frequents the banks of freshwater pools and streams, a few miles inland, its manners very much approaching our common *Summer Sandpiper*, *Tringa hypoleucus*. Montagu has described both, but without separating them as distinct species. Two other specimens of the *Tringa Temminckii* were mentioned by Mr. Yarrell, as at present in the collection of friends, both of which had been killed in England. This is therefore a further addition to the British Fauna.

A distinct species of *Tringa* was also exhibited, which had been killed in Cambridgeshire, in September last, and was considered by Mr. Yarrell to be entirely new as a British bird, and included by Temminck in his "Manuel des Oiseaux d'Europe." It was believed to be identical with the *Tringa roussatre*, Vieill., which that naturalist has chosen for the type of his genus *Tringa*, under the name of *Tringa rufescens*. A more particular account of this prettily marked bird was promised. The Prince of Musignano informed the meeting, that the bird under examination very closely resembled a species recently described by him, under the name of *Tringa pectoralis*.

The Secretary exhibited several specimens of birds from North America, belonging to Mr. Leadbeater, among which were the following rare species; *Vultur Californianus*, Shaw; the *Corvus Stelleri*, Lath., and *C. Columbianus* or *Clarke's Crow* of Wilson's American Ornithology; the *Bombycilla garrula*, Briss., now first discovered to be a native of the United States; the *Cinclus Pallasii*

of Temminck's Manual; and a new species of *Phaleris*, Temm. The Prince of Musignano made some observations on these birds, and signified his intention of describing them in the Zoological Journal, in a supplementary paper to his "*Synopsis*" of the birds of the United States. He proposed to call the new species of *Phaleris*, *P. cerorhynca*.\*

---

GEOLOGICAL SOCIETY.

May 5, 1826. The reading of a paper, by Dr. Bigsby, *On the Geology of the Valley of the St. Lawrence*, was concluded.

June 2. A paper was read, entitled, *On the fresh-water strata of Hordwell, Beacon, and Barton Cliffs, Hants.*; by C. Lyell, Esq. F.R.S. F.L.S. F.G.S.

Nov. 3. A paper was read, entitled, *Additional remarks on the nature and character of the Limestone and Slate, principally composing the rocks and hills round Plymouth*; by the Rev. R. Hennah, F.G.S. The authour refers to a former paper on this subject, in which he confined his field of observation to the narrow tract between the Plym and the Tamar; he now extends its limits to Mount Batten and Statten heights, in a southerly direction. In this tract, which forms the eastern side of Plymouth Sound, as well as the western side from Mount Edgcumbe to Pudding Point, *animal-remains* are imbedded in the slate. On the eastern side the superior beds are occasionally of an ochreous clay slate, containing thin ferruginous veins with trochites and stems of encrinites: these are associated with some other fossil remains, the characters of which are indistinct. The lower beds consist of compact light gray slate inclosing remains like those found in the limestone and clay-slate. An ironstone bed occurs here which is used for pavements; and fragments of animal-relics are discoverable in it. From these facts the authour infers, that the slate which is prolonged beyond the Plymouth limestone, even as far southward as Whitesand Bay, is not primitive: but he remarks, that he has never perceived animal-remains in the slate north of that limestone.

\* See No. IX. p. 53.

Nov. 17. A notice was read, *On some beds associated with the magnesian limestone, and on some fossil fish found in them*; by the Rev. A. Sedgwick, Woodwardian Professor, F.R.S. F.G.S.

Among the beds described in this communication is a deposit, consisting, in some places, of shell-limestone, alternating with variously-coloured marl, and in other places of thin-bedded, nearly compact limestone, alternating with bituminous marls. In the county of Durham, this deposit is associated with an extensive formation of marl-slate. In this marl-slate many specimens of fish have been discovered; some of which appear to be identical in species with the fish in the marl-slate of Thuringia. In the same deposit have also been found many vegetable impressions.

A paper was also read, entitled, *Observations on the bones of Hyænas and other animals, in the cavern of Lunel, near Montpellier, and in the adjacent strata of marine formation*, by the Rev. W. Buckland, D.D., Professor of Mineralogy and Geology, in the University of Oxford.

Jan. 5, 1827.—A Notice was read, accompanying some specimens from the Hastings-Sand Formation, with a copy of a work on the Fossils of Tilgate Forest; by G. Mantell, Esq. F.R., L. and G. S.,—in a letter to R. I. Murchison, Esq. Sec. G.S.

The authour states, that his principal object in the present volume, is to give a correct and extended view of that division of the Hastings-Sands, distinguished by him in the strata of Tilgate Forest, the relations of which he illustrates by the section of a quarry at Pounceford, where the Ashburnham limestone with bivalves, &c. is seen overlying sandstone and calciferous grit (Tilgate-stone).

A recapitulation of the animal and vegetable remains (in which the authour particularly notices that gigantic Saurian the *Iguanodon*), shows the vast preponderance of land and freshwater exuviae in the Hastings strata over those of marine origin; a circumstance in strict accordance with what is now constantly occurring in all deltas and estuaries of great rivers. A description is given in the concluding chapter of the work, of the probable condition of the country anterior to the epoch of this deposit.

Feb. 16. At the Annual General Meeting this day, the Society



proceeded to the election of Officers for the ensuing year, when the following list was delivered in by the scrutineers:—viz.

*President*: William Henry Fitton, M.D., F.R.S.

*Vice-Presidents*: Arthur Aikin, Esq. F.L.S.; John Bostock, M.D., F.R.S.; Rev. W. D. Conybeare, F.R.S.; Rev. Adam Sedgwick, F.R.S., Woodwardian Professor, Cambridge.

*Secretaries*: W. J. Broderip, Esq. F.L.S.; R. I. Murchison, Esq. F.R.S.

*Foreign Secretary*: Henry Heuland, Esq.

*Treasurer*: John Taylor, Esq. F.R.S.

*Council*: Henry Thomas de la Beche, Esq. F.R. & L.S.; J. E. Bicheno, Esq. Sec. L.S.; Davies Gilbert, Esq. M.P., V.P.R.S.; George Bellas Greenough, Esq. F.R. & L.S.; John Frederick William Herschel, Esq. Sec. R.S.; Armand Levy, Esq.; Charles Lyell, Esq. F.R.S.; William Hasledine Pepys, Esq. F.R.S.; Rev. John Honeywood Randolph; Charles Stokes, Esq. F.R.S. & L.S.; J. F. Vandercom, Esq.; Henry Warburton, Esq. M.P., F.R.S.; Thomas Webster, Esq.; Thomas Young, Esq.

*April 6.* The Rev. J. MacEnery, of Torquay, was elected a Fellow of the Society.

*April 20.* A Paper was read giving *An account of the discovery of a number of fossil bones of Bears, in the grotto of Osselles, or Quingey, near Besançon, in France*, by the Rev. Dr. Buckland, Professor of Geology in the University of Oxford.

The authour visited this cave in October 1826, for the purpose of applying to it the method of investigation, which his experience in other caverns had taught him to adopt with success in the pursuit of fossil bones.

The grotto of Osselles is of vast extent, nearly a quarter of a mile in length, and made up of a succession of more than thirty vaults, or chambers, connected together by narrow passages, and running almost horizontally into the body of a mountain of Jura limestone, on the left bank of the Doubs near Besançon.

The only entrance to the grotto is by an irregular aperture about the size of a common door, in the slope of the hill about 60 feet from the river. The abundance and beauty of the stalactite in many parts of this cavern, have rendered it one of the most

celebrated and most frequented of any in France ; but before Dr. Buckland, no one had ever sought for bones beneath the crust of stalagmite, which in most of the chambers covers the floor.

On breaking for the first time through the stalagmite, the guides were much surprised to find the author's prediction verified, as to the existence of a thick bed of mud and pebbles, beneath what they had considered to be the impenetrable pavement of the cave, and still more so, to see that in every one of the only four places which he selected for investigation, this diluvium was abundantly loaded with the teeth and bones of fossil Bears. These lie scattered through the mud and gravel, in the same irregular manner as the bones of Bears lie in the caves of Franconia and the Hartz ; and like them, are the remains of animals that appear to have lived and died in those caverns before the introduction of the diluvium. The bones were found no where in entire skeletons, but dispersed confusedly through the mud : they were from Bears of all ages, and none bore marks of either having been rolled by water, or gnawed by the teeth of Hyænas, of which last-named animal Dr. Buckland found no traces in this cave, in the few spots which he examined.

Insulated teeth, ribs, and vertebræ, separate fragments of skulls, and epiphyses detached from their bones, lay scattered through the mud and pebbles.

In one extensive grotto called the "Salle à danser," which from its size and dryness is selected by visitors to eat and dance in, there is neither stalactite on the roof, nor stalagmite on the floor, but simply a thick deposit of diluvial mud, containing the same bones as in the other chambers ; this mud being very dry is intersected by narrow crevices descending from its surface ; and the shells of eggs and nuts, and the bones of chickens, &c., that are carelessly thrown aside by visitors, have sometimes fallen into these fissures, where they lie in juxtaposition with the antediluvian bones. Some of these modern remains are also dragged by rats into holes made in the mud by themselves, or by rabbits, badgers, and foxes.

The authour concludes by stating that the best rule to follow in pursuit of antediluvian remains in caverns, is to select the lowest

parts in which any diluvium can have been accumulated, and there dig through the stalagmitic crust, and seek for teeth and bones in the mud and pebbles that lie below. He also proposes as a test for distinguishing bones of this antiquity, their property of adhering to the tongue if applied to them after they are dry;—a property apparently derived from the loss of animal gelatine they have sustained, without the substitution of any mineral substance, such as we find in bones imbedded in the regular strata. This test extends equally to the bones of the osseous breccia of caverns and fissures, and to those in all superficial deposits of diluvium, excepting such as are too argillaceous to have admitted the percolation of water; but the property of adhesion is rarely found in bones from recent alluvium, or from peat-bogs, nor does it exist in human bones, which the authour has examined from Roman graves in England, and from the druidical tombs of the ancient Britons, nor in any of the human bones which he has discovered in the caves of Paviland and Wokey Hole.

Dr. Buckland proposes to apply this test to the much disputed case of human bones, said by M. Schlotheim to have been discovered in the cave of Köstriz in contact with those of the Rhinoceros and other animals.

Dr. Buckland also found, in the collection of Professor Fargeaud of Besançon, some teeth of fossil Bears from a mine of Pea-iron-ore in that neighbourhood; but could not visit the spot to ascertain whether this ore was extracted from a bed of superficial diluvium, or from a fissure. Such Iron-ore abounds in the diluvium of the east of France; and in fissures at Plymouth, and near Spa.

May 4. Thomas Bell, Esq. F.L.S., was elected a Fellow of the Society.

June 15. A Notice was read, *On some fossil bones of the Elephant and other animals, found near Salisbury*, by Charles Lyell, Esq. F.R.S., F.G.S., &c.

Bones and teeth of the Elephant, Rhinoceros, and Ox, have been found for many years past in the brick-earth at the village of Fisherton Anger, at the distance of about three-quarters of a mile from Salisbury cathedral. Several pits sunk in this brick-earth

show that it varies in thickness in different places from about 10 to 20 feet. It bears every mark of a tranquil sedimentary deposit from water; but the laminae are sometimes divided by thin layers of fine sand, or occasionally, but rarely, by a layer of small flint pebbles. There are no marine remains; but land-shells are said to occur sometimes in this deposit. The brick-earth rests upon a bed of chalk-flints, the greater part of which are not water-worn; and beneath these is chalk, which is loose and rubbly in the upper part.

This brick-earth is not connected with the alluvial soil of the present valley, but appears to have been deposited when the valley was at a higher level; for it forms a low terrace along the side of the river Wily, between Salisbury and Wilton, rising 30 or 40 feet above the present water-meadows. It is necessary at least to suppose that when these beds were accumulated, the water rose much higher than it now does.

The bones are in a very decomposed state, but have no appearance of having been rolled; they are found in the lower part of the brick-earth, and not in the subjacent flint-gravel. And in one spot there is reason to believe that the remains of an entire skeleton of an Elephant might have been procured.

This meeting terminated the Session, and the Society adjourned to Friday evening, the 2d of November next.

---

#### ZOOLOGICAL SOCIETY.

WE have the satisfaction to report the further progress of this society towards the attainment of the objects of its institution, in the accession of new members, and new contributors to its collections; the arrangement of the subjects in the Museum in Bruton Street; and the opening, to the members and their friends, of the Menagerie and Gardens in the Regent's Park. Since the general meeting on the 7th of March, at which the Marquis of Lansdowne was unanimously elected President of the Society, in the place of Sir T. S. Raffles, its lamented founder, as noticed in our last

number, the extensive collection in every department of Zoological science formed by Sir Stamford in Sumatra has been added to the Museum. This collection is particularly rich in those rare animals which have only lately been made known to science from the Eastern Islands. Among the most conspicuous of the *Mammalia* are six species of the *true Apes*, (*Simia*, Auct.); male and female of the *Proboscis Monkey*, (*Simia nasica*, Linn.); a species nearly allied to it, apparently new; several specimens of the *Malayan Bear*, (*Helarctos Malayanus*, Horsf.), of the various *Tiger Cats* of Sumatra, one a new species; specimens also of the different species of *Tupaia*, Raffles, of the new genera *Mydaus*, *Ictides* and *Gymnura*, of the *Tapir*, *Dugong*, &c., &c. The *Birds* include most of the splendid species of Sumatra, particularly the *Gallinaceous Fowls*. And various new and interesting species are found among the *Fishes*, *Reptiles*, *Insects* and *Zoophytes*. The most important circumstance relating to this collection, is that it contains duplicates in spirits of most of the rare species; so that the skeletons, and internal parts may be preserved at the same time with the skins. Various other valuable animals have been added by the Members and well wishers of the Society. Among them that rare animal, the *Fennec* of Bruce, with its skeleton, has been presented by Mr. Cross of Exeter Change; the *Helarctos eurypilus*, (the specimen lately described by Dr. Horsfield, and figured in this Journal,) by Mr. Cops of the Tower; the *Ailurus fulgens*, with several other valuable Eastern animals, and a striking collection of Horns from the East, by Gen. Hardwicke, &c., &c. But the most conspicuous of the late acquisitions is a fine specimen of the *Ostrich*, graciously presented by His Majesty, the prepared skin of which is now exhibited in the Museum, whilst various preparations of its skeleton and viscera have been made for the departments of comparative anatomy.

Weekly meetings were held until the close of the season, at which lectures on various branches of Zoology, given by Joshua Brookes, Esq. F.R.S., and by the Secretary, were attended by a numerous audience of scientific gentlemen and other members of the Society; the lectures by Mr. Brookes, the subject of which was chiefly the comparative anatomy of Birds, were in part illus-

trated by demonstrations of the structure of the Ostrich, performed on the specimen presented by His Majesty.

In the Society's Menagerie and Gardens, situate on the north-eastern side of the Regent's Park, not far beyond the new St. Catherine's Church and Hospital, nearly one hundred living animals are exhibited in suitable paddocks, dens, and aviaries. Among the most attractive of these are two beautiful *Llamas*, one presented by the Duke of Bedford, the second by Robert Barclay, Esq. of Bury Hill; a *Leopard*, presented by Lord Auckland; some *Kangaroos* bred in this country by the Marquis of Hertford; a pair of *Emus* bred at Windsor by the Earl of Mountcharles; a fine *Russian Bear*, presented also by Lord Hertford. Specimens of the *Ratel* or *Indian Badger*, *Ichneumons*, *Tiger Cats*, *Badgers*, *Monkeys*, &c., &c., add to the attractions of the Menagerie. Some valuable animals also from the Arctick regions have been lately presented by the Hudson's Bay Company: such as the *Canadian Lynxes*, *Arctic Foxes*, *Porcupines*, *Horned Owls*, &c., &c. The ornithological department comprises several species of *Eagles*, *Cranes*, *Gulls*, *Gannets*, *Corvorants*, with various *Gallinaceous Birds*, &c.

Upwards of six hundred Members have already joined the Society.

---

ROYAL ACADEMY OF SCIENCES OF PARIS.

*February 6, 1826.*—M. G. de St. Hilaire read a description of the sacred crocodile of Egypt, called *Suchus*. M. M. Brongniart, Brochant, Cuvier, and G. de St. Hilaire were appointed to examine a memoir by M. Marcel de Serres on the bones of the *Mastodon* found in Languedoc.

*February 13.*—M. Dutrochet read a memoir on the ova and larvæ of the *Batrachia*.

*March 6.*—M. M. Bosc and Duméril gave a favourable report on a memoir by M. M. Quoy and Gaimard relating to the coralligenous zoophytes.

*April 3.*—M. G. de St. Hilaire communicated some observations made on eggs modified in their development by artificial means.

*April 10.*—M. G. de St. Hilaire continued the report of his researches in the establishment for artificial incubation at Auteuil. M. M. Latreille and Bosc gave a report on M. Dejean's memoir on the genera forming the tribe of *simplicipides* among the *Carabidæ*. M. Marcel de Serres announced that he had recently found a great femur among the fossil bones at Montpellier.

*May 1.*—M. Bory de St. Vincent read part of a letter addressed to him by M. Pason, a Spanish naturalist, respecting the naturalization of cochineal in the environs of Malaga.

*May 8.*—Mr. Edwards read a memoir on the connexion between the vegetable and animal kingdoms.

*May 15.*—M. Latreille made a verbal report on the second volume of M. Dejean's work on the species of *Coleoptera* in his collection.

*Annual Public sitting of the Academy on June 5.*—Among the works reported on very favourably by the Monthyon prize Committee was Dr. Lippi's Comparative-anatomical illustrations of the lymphatico-chyliferous system. Among the prizes proposed for 1827, were the following: for a general and comprehensive history of the circulation of the blood in the four classes of vertebrated animals, before and after birth, and at different ages, a gold medal, value 3000 francs; as no satisfactory memoirs had been received for the Alhumbert prize, the Academy determined that the sum destined for it in 1826 should be united with those which will be due hereafter, to form a prize of 1200 francs, to be awarded, in 1829, to the best memoir on the following subject; a complete examination, accompanied with figures, of the changes undergone by the skeletons and muscles of Frogs and Salamanders at the different epochs of their life.

*June 12.*—M. Latreille presented some recent specimens of *Cardium edule*, found in an alluvium at Abbeville, at the depth of about twenty-three feet, and at the distance of four leagues from the sea in which these animals live. M. Michelot announced that M. Billaudel, civil engineer at Bordeaux, had discovered, in a quarry on the banks of the Garonne, a cavern in which he found a quantity of bones of various animals; among them the jaws of the Hyæna, of the Liou or the Tiger, and of the Badger, bones of the Ox, &c.

Art. XXXII. *Scientific Notices.*

## ROYAL CABINET OF INSECTS AT BERLIN.

The following account of the past and present state of the Royal Cabinet of Insects at Berlin, and of the accessions which it has received within the last few years, is extracted from the Preface to Klug's "Entomologische Monographien," noticed in the second volume of this Journal, p. 538.

"PREVIOUS to the commencement of the year 1820, the Collection of Insects in the Museum of the University was of very trivial importance. It consisted merely of a small Cabinet of European *Coleoptera*, purchased from Captain Von Malinowsky; of a few partially exotic insects from the Cabinet of Dr. Riemer; of the Collection of European *Lepidoptera*, formed by our immortal Laspeyres; and of the Cape Insects presented to the Museum by my respected colleague Professor Lichtenstein. At this period the most striking disparity prevailed between this and the other richly endowed departments of the Royal Museum; when the gap was filled up by the purchase of the united Cabinets of Hellwig and Hoffmanssegg. This splendid collection contained about 19,000 species, of which nearly 9,000 were exotic, for the most part Brazilian. The *Coleoptera* amounted to near 7,500, the *Orthoptera* to about 500, the *Neuroptera* to 350, the *Lepidoptera* to about 5,000, the *Hymenoptera* to something more than 2,000, the *Hemiptera* to about 1,400, and the *Diptera* to nearly 2,000. About the same time the magnificent Collection of Salingré, so frequently mentioned by Herbst, together with many rare *Coleoptera* from the Cabinet of Holthuysen were transferred to the Museum by their respective proprietors; as were also two small Collections formed in this city by Surgeon Collignon and Counsellor Kirstein, the former by way of present, and the latter as a legacy. Nor was the opportunity of purchasing the Cabinet



of the celebrated Knoch at a reasonable price, and thereby greatly increasing the number of our North American species, and of the smaller Beetles more especially, suffered to escape. Finally, in the course of the past year my own valuable collection of *Hymenoptera* was added to the Royal Cabinet, and by this means an Order hitherto very defective, was rendered at least equal, if not superior, to any of the others.

“But as the Collection has been within a very short time considerably and generally increased by the rich transmissions of our travellers, the additions thus made to it deserve a particular notice. The most extensive acquisitions have hitherto been derived from Brazil. The first of these, which were sent from Bahia by Freireiss, were of little importance, and were soon rendered superfluous by the rich contributions of Sellow, who was enabled, by the active assistance of the Prussian Ambassador at the Court of Brazil, Count Von Flemming, and of the zealous Naturalist Dr. Von Olfers, and partly in the company of the latter, to collect with marked good fortune in the districts of Bahia and Minas Geraes, in the environs of Rio Janeiro and Monte Video, in entirely different localities from those which had been visited by Sieber, the Count Von Hoffmanssegg's Chamberlain. The collection was also enriched with many new species from Rio Janeiro by Feldner and Beyrich; with important contributions from the same neighbourhood by the active Entomologist Bescke of Hamburg; and with a great number of the finest and rarest species, more particularly of *Coleoptera* and *Lepidoptera*, presented with singular liberality by M. Von Langsdorff. That on no side has the communication of a single species been withheld appears from the fact that the very numerous uniques of M. Langsdorff's Collection were by the express directions of their proprietor transferred to the Royal Cabinet, and replaced only by an equal number of duplicate specimens from the latter collection.

“Although in various ways several thousand new Brazilian species have been thus added to our Cabinet, America is not the only source from which it has been enriched. The Museum has received, through the unwearied exertions of the prematurely

dead Bergius, a select and uncommonly fine collection of Cape Insects. Bergius was followed by Krebs, whose collection, formed at the Cape and especially in the distant district of Vitenhagen, increased so greatly the number of new species that this addition must be considered, in an entomological point of view, as one of the most important. Lastly among the collections in Natural History, made at the Cape by Mund and Maire, were many new and remarkable additions to Entomology. The transmissions of our travellers in Egypt and Nubia, Drs. Ehrenberg and Hemprich, have also contributed not a little, by their surprising richness, to the increase of our Insect Collection; although we have yet received but a small part of their collections, the travellers having determined, as the safer mode of conveyance, to bring with them their entomological treasures when they return to Europe at the end of the ensuing year. The collection too which was formed by Dr. Von Chamisso, in a very different part of the earth, on occasion of the Russian voyage of discovery, has been communicated to the Museum; and finally it remains to notice the journey of Dr. Eversmann from Orenburg to Bochara, which has been productive, in an entomological point of view, of no trifling advantage."

After speaking of the additions made by way of exchange, &c. and adverting to the condition of the Insects and of the Cabinets in which they are contained, Dr. Klug proceeds as follows:

"An enumeration of the collection has not been lately made. At the present moment such a proceeding is impossible, as in several divisions the newly arrived species have not yet been referred to their proper situations. The *Hemiptera* alone were a short time since numbered, and found to amount, without comprehending the last arrivals from Monte Video and those from Egypt, the *Heteroptera* to 1,540, and the *Homoptera* to 920, in all 2,460 species. The number of the three first great divisions of the *Glossata* was also taken, and found to amount to 2,488 *Papiliones*, and 1189 *Sphinges* and *Bombyces*."

We have thus only one point of comparison of which we can avail ourselves between the Cabinet of Hoffmannsegg in 1820 and that of the Royal Museum of Berlin in 1824; but taking for

granted (what may fairly be presumed) that the whole collection had received additions to an equal extent with the *Hemiptera*, we may calculate that, if that Order had been increased from 1400 to 2460, the total number of species, which in 1820 amounted to 19,000, could not in 1824 have fallen very far short of 34,000.

---

REMARKS ON CYPRÆÆ DESCRIBED BY MR. GRAY.

By L. W. Dillwyn, Esq. F.R. & L.S.

No. 10. I could never find any specific character to distinguish this shell from *C. exanthema*, and I have a memorandum extracted from Dr. Solander's MS. in the Banksian Library that he also considered the Linnean *C. cervus* to be nothing more than a variety.

No. 17. *Cinerea*. The error in the Descriptive Catalogue which Mr. Gray has judiciously pointed out arose from my having at first entertained some doubt about this shell, and from my having described it as a variety of *C. vanelli*, and afterwards as a separate species, without the necessary erasure of the former description from my MS.

No. 19. To prevent confusion it may be observed that the *C. arenosa* of Solander, and of the Portland Catalogue, is the *C. Turdus* of Lamarck.

No. 26. The *C. subfuscula* of Martyn appears to me to be a distinct species, and it differs from *C. Vitellus* not only in being half as large again, but also in having the upper surface dark brown and the base fawn-coloured; it is the *C. Dama* of Perry, t. 23. f. 3.\*

\* No. 26. There is another species lately published in the Zoological Journal, Vol. ii. p. 495, named *C. melanostoma*, by the Rev. G. R. Leathes, which is quite distinct from *C. Vitellus*, however nearly it resembles that species in general appearance: to this we believe *C. Dama* to be a synonym; we can however assert, without the least hesitation, that *C. subfuscula* of Martyn, is nothing more than a large specimen of *C. Vitellus*, which will be very evident if attention be paid to the peculiar character of the species. As to Perry's work, the worst of all bad books, it ought never to be cited. G. B. S.

No. 33. *C. Pyriformis* is the *C. umbilicata* of Solander, and as such is mentioned in my Index to the 3d edition of Lister's Hist. Conch., see t. 667. f. 12. It is said in the Portland Catalogue, Lot 255, to inhabit the Coasts of Coromandel, and till after the publication of my Descriptive Catalogue, I never saw the shell.†

No. 35. I once saw a shell which had been marked by Mr. Humphreys as the *C. flaveola* of Linnæus and Solander, and I believe that Mr. Gray's supposed variety of *C. ziczag* is the same species.

No. 36. *Clandestina*. Soon after the publication of my Descriptive Catalogue I obtained a specimen of this shell, and, on again referring to Solander's MS., I found that he had at first considered it to be a variety of *C. ziczag*, and afterwards described it separately as the Linnean *C. clandestina*, with a reference to Petiver, t. 97. f. 10. I mention this circumstance because it serves to confirm the propriety of Mr. Gray's arrangement; but his reference to the *C. nitida* of Solander puzzles me, and I much doubt whether any species is either described or mentioned with this name among the Doctor's MSS. in the Banksian Library.

No. 39. *Quadrinaculata*. This rare shell, of which I never saw more than one specimen, is the *C. nimbose* of Solander and of the Portland Catalogue, and comes from the Coast of Coromandel.

No. 44. *Tabescens*. I doubt the propriety of uniting *C. teres* with this species, and it more probably belongs to *C. cylindrica*.

† No. 33. I transcribe the following from my copy of Solander's MS. to show that the *C. pyriformis* of Gray cannot be identical with *C. umbilicata* of Solander.

"Spirâ impressâ umbilicatâ.

*umbilicata*. C. ovata, brunnea, fasciis duabus albidis, dentibus croceis, spirâ umbilicatâ.

List. 667. 12.

Hab. in O. Coromandeliano. Dr. Koenig.

α. testa brunnea, *subtus fusca*.

β. testa lutescens, *subtus crocea*.

affinis *C. Helvolæ*, Mss. facile autem distinguitur spira omnino in umbilicum intrusa, et quod *dentes toti crocei*."

I have marked in italics those passages which prove my assertion: from the consideration of this description it appears much more probable that *C. Pyrum* of Gray is identical with *C. umbilicata* of Solander. G. B. S.

No. 49. *Errones*. I have seen intermediate specimens which completely connect the *C. ovum* of Gmelin with this species.

No. 61. *Obvelata*. Is the *C. pressa* of Solander, and was first brought by him from Otaheite.

No. 65. *Angustata*. The *C. maculata* of Perry, t. 20. f. 5. is most probably intended for this species.

No. 67. *Piperita*. In Dr. Solander's MS. at the Banksian Library, no mention is made of any species with this name.

No. 70. To this species the following Synonymes may be added.

Indian speckled Starling Cowry. *Petiver*, t. 80. f. 9.

Cypræa No. 43. *Schroeter Einleitung*, i. p. 146.

Cypræa arenosa. *Solander's MS.*

Cypræa ovata. *Perry*, t. 21. f. 3.

No. 72. *Flaveola*. The shell here described accords badly with the description in Mus. Lud. Ulr. p. 581. See note on No. 35.

No. 77. *Listeri*. Is the *C. marginalis* of Solander's MS. and of the Portland Catalogue.

NATURE OF VISION IN THE INVERTEBRATE ANIMALS.

The following passage, concluding with a remark on the probable nature of vision in insects, is extracted from the "*General statement of the undulatory theory of Light*," in the article "*LIGHT*," by Mr. Herschel, published in Part XX of the Encyclopædia Metropolitana, which appeared in April last. It is submitted to the readers of the Zoological Journal, in support of a hypothetical suggestion respecting the vision of certain groups of *Mollusca* and *Annelida*, contained in a paper "*On certain organs of the Helicidæ usually regarded as their eyes*," printed in vol. ii., p. 497, which some scientific friends of the authour have been disposed to regard as improbable. In that suggestion, however, the same idea was proposed on the nature of vision in the *Mollusca* and *Annelida*, in a general and perhaps an obscure manner, which Mr. Herschel, with beautiful precision and particularity, has expressed on the vision of *Insects*.

“ 567. Although any kind of impulse, or motions regulated by any law, may be transferred from molecule to molecule in an elastic medium, yet in the [undulatory] theory of light it is supposed that only such primary impulses as recur according to regular periodical laws, at equal intervals of time, and repeated many times in succession, can affect our organs with the sensation of light. To put in motion the molecules of the nerves of our retina with sufficient efficacy, it is necessary that the almost infinitely minute impulse of the adjacent ethereal molecules should be often and regularly repeated, so as to multiply, and, as it were, concentrate their effect. Thus, as a great pendulum may be set in swing by a very minute force often applied at intervals exactly equal to its time of oscillation, or as one elastic solid body can be set in vibration by the vibration of another at a distance, propagated through the air, if in exact unison, even so may we conceive the gross fibres of the nerves of the retina to be thrown into motion by the continual repetition of the ethereal pulses; and such only will be thus agitated, as from their size, shape, or elasticity are susceptible of vibrating in times exactly equal to those at which the impulses are repeated. Thus it is easy to conceive how the limits of visible colour may be established; for if there be no nervous fibres in unison with vibrations more or less frequent than certain limits, such vibrations, though they reach the retina, will produce no sensation. Thus, too, a single impulse, or an irregularly repeated one, produces no light; and thus also may the vibrations excited in the retina continue a sensible time after the exciting cause has ceased, prolonging the sensation of light (especially of a vivid one) for an instant in the eye in the manner described, (Art. 543.) *We may thus conceive the possibility of other animals, such as insects, incapable of being affected with any of our colours, and receiving their whole stock of luminous impressions from a class of vibrations altogether beyond our limits, as Dr. Wollaston has ingeniously imagined (we may almost say proved) to be the case with their perceptions of sound.*”

E. W. B.

YEARLY APPEARANCE OF THE SWALLOW AND CUCKOO.

*Memorandum of the times of appearance of the Swallow and the Cuckoo, kept for several years back by George Weare Brackenridge, Esq. of Broomwell House, Brislington Wick, near Bristol.*

	Swallow.		Cuckoo.
1801	April 21	....	19
1802	.... 25	....	17
1803	.... ..	....	21
1804	.... 25	....	25
1805	.... 18	....	18
1808	.... 9	....	15
1812	.... 10	....	..
1813	.... 12	....	..
1814	.... 10	....	17
1815	.... 12	....	30
1816	.... 19	....	21
1817	.... 12	....	25
1818	.... 10	....	19
1819	March 29	....	..
1820	April 17	....	19
1821	.... 13	....	21
1823	.... 14	....	22
1824	.... 15	....	23
1825	.... 14	....	17
1826	.... ..	....	21

Mr. Brackenridge endeavoured to keep a young Cuckoo over the winter 1823—1824, but it had been declining very fast for some days, and died on the 23d of April 1824, the very day on which a Cuckoo was heard out of doors.

---

STATE OF NEW YORK

IN SENATE

January 1, 1900

Year	Amount	Percentage
1899	1,000,000	100
1900	1,000,000	100
1901	1,000,000	100
1902	1,000,000	100
1903	1,000,000	100
1904	1,000,000	100
1905	1,000,000	100
1906	1,000,000	100
1907	1,000,000	100
1908	1,000,000	100
1909	1,000,000	100
1910	1,000,000	100
1911	1,000,000	100
1912	1,000,000	100
1913	1,000,000	100
1914	1,000,000	100
1915	1,000,000	100
1916	1,000,000	100
1917	1,000,000	100
1918	1,000,000	100
1919	1,000,000	100
1920	1,000,000	100

The following table shows the amount of the State debt for each year from 1899 to 1920. The amount of the debt has remained constant at \$1,000,000 throughout the entire period.



THE  
ZOOLOGICAL JOURNAL.

August—November, 1827.

---

ART. XXXIII. *Contributions to the British Fauna.* By  
GEORGE JOHNSTON, M.D., *Fellow of the Royal College  
of Surgeons of Edinburgh.*

[Continued from p. 181.]


Class. ANNELIDES. Lamarck.

Gen. GALBA.

CHAR. *Body* larva-like, annulose, without feet. *Mouth* terminal, inferior, extensile, with a horny mandibular apparatus placed chiefly in the gullet. *Branchiæ*, on the second segment of the body, naked, of two pectinate branches uniting to form a common tube: *Suckers* on the anal segment, two, (respiratory.?)

GALBA MARINA.

DESC. *Body* larva-like, five lines in length, round, tapered towards the anterior end, abruptly truncate behind; of a soft consistence, and transparent white colour, marked with lines of a deeper shade from the internal vessels; it consists of twelve equal segments, the last terminated by two large suckers of a brown colour. *Mouth* subterminal, inferior, triangular. Anterior to and above the mouth are two *papillary eminences*, roughened with

very minute black spines on their inferior aspect. *Branchiæ* naked, not retractile, small, of a milk white colour, placed one on each side of the second segment: they consist of two pectinate diverging branches  uniting to form a tube, which being of a darker colour and firm consistence, is seen running obliquely downwards to join a large vessel, which will be described below. The little *processes* are about seven in number on each branch, and appear to be tubular. The *margins of the ventral surface of the rings* are thickened, and set transversely with numerous minute black springs, which are excellent substitutes for feet. *Anus* large, protuberant, roughened with minute dark spines, not terminal, but placed on the under surface of the last segment. This is terminated by two large ovate *suckers*, placed on the dorsal margin: their rim is of a dark brown, and surrounded with a beautiful fringe of delicate *ciliæ*, which, however, it is difficult always to detect. The disc of each sucker seems to be divided into three lesser concavities.

The transparency of the animal allows us to examine, to a certain extent, its internal structure, which, I think, is very curious, and somewhat anomalous. What I have called the *mandibular apparatus*, being of a black colour, is very evident. This is a horny piece placed within the proboscis or gullet, prolonged in front into two long and slender mandibles, bifid at their apices, which appear at the mouth just below the papillary eminences; and divided behind into four equal sharp processes, which embrace the gullet on all sides. The animal is constantly extending and retracting the mouth, and this apparatus is moved backwards and forwards accordingly, but it is never protruded beyond the aperture. The mouth is lengthened, not by an evolution of a proboscis, as in some of the other *Annelides*, similar to the evolution of the tentacula of a snail, but by the mere extension of the anterior segments; when extended, however, they do form a kind of proboscis, and it is only when extended that the parts can be properly examined. The *intestine* is not distinctly perceptible, but from what is seen, and as a fine blunt probe may be passed from the anus to the mouth without much derangement to the structure of the animal, we may infer that it is a straight

canal of considerable calibre. Even on strong pressure, the contents do not pass either by the mouth or anus, except the animal has been dead for some time, but rather escape through the ruptured sides; an experiment, which seems to prove that there is some valvular apparatus at each extremity. At each sucker there is seen to arise or terminate a large vessel, of the brilliant white of quicksilver, which runs up each side, and communicates with the blackish firm tube of the branchiæ. These vessels are connected by an anastomosing branch just above the suckers, and by another at the branchiæ; they are tolerably straight, and give off in their course small vessels to the sides and under parts. They are evidently filled with air. More deeply seated than these, and lying as it were above the intestine, is another vessel distinguished by its milk white colour. This vessel is very tortuous and long, and forms a kind of circle, for I cannot determine either its place of origin or termination. It is often bent upon itself, but no branches seem to arise from it; nor can any communication with the air vessels be traced. It contains a fluid of a thickish consistence, and of a milk white colour.

This animal inhabits a cylindrical tube, open at both ends, and composed of particles of coarse sand, cemented together by glutinous matters.\* The tube is so common that it may be found fixed amongst the entangled roots of almost every specimen of *Laminaria digitata* cast on shore. Many tubes are generally placed together, so as to form an irregular mass, and on breaking through this we expose numerous animals resembling exactly so many maggots in a piece of putrid cheese. The animal crawls with considerable quickness over solid and even surfaces; as might have been conjectured from the structure of its ventral surface, it crawled with ease up the sides of the glass vessel in which it was contained, nor did it hesitate to leave the water, out of which it can live a long time without apparent inconvenience. When thrown on the surface of water it seems to have no power of descending to the bottom, or even of locomotion,

\* I was wont to consider the tube as the *Sabella lumbricalis* of Montagu. A similar tube, and equally common, I know to be inhabited by a very different animal.

but remains still hanging in a perpendicular position, with its suckers at the surface; or more commonly it bends up the head to the anal extremity, so as to form a kind of circle. We are led to presume, from the structure of the mouth, that the animal is carnivorous. But the most singular part of the structure are the respiratory organs. The suckers I consider as such, as well as the branchiæ in front. The situation of the suckers does not seem well calculated for prehension, and their communication with the air vessels may be considered sufficient proof of their function. The difficulty is to determine the course of the air, and for what purpose the animal is so liberally supplied with it. Is it extricated from the water by the proper branchiæ, and expelled at the suckers after having circulated through the body; or are both branchiæ and suckers absorbent organs, exercising each their operation according to the position of the animal in its tube? These questions will probably not be solved until we have discovered its affinities, for our actual knowledge of the *Annelides* is exceedingly imperfect.

The only modern classification of the *Annelides* with which I am acquainted is that of Lamarck; but to none of his orders of families is our animal referable. It will not stand amongst the "*Apodes*," for its branchiæ are naked, and placed on the anterior part of the body; and its characters accord still less with those of the two following orders. In the circumstance of its inhabiting a tube open at both ends, it resembles the "*Maldanies*;" and it is related to the "*Amphitritées*" by the position and form of its branchiæ, but still the characters in which they differ are so great, as to prove that they stand at wide intervals in the class. Under these circumstances I think myself justified in proposing a new genus for its reception—to which in my note book I had affixed the name *Flemenia*, in honour of the author of the "*Philosophy of Zoology*;" but this I have been induced to change, as the honour will come more appropriately from some naturalist of equal eminence, and not unknown to fame. "*Gratum est laudari a laudato viro.*"

Ord. APODES. Lam.

Gen. CAMPONTIA.

CHAR. Body cylindrical, naked, annulose. Mouth with exsertile corneous mandibles. Two prolegs\* on the anal segment; and two on the first segment.

## CAMP. ERUCIFORMIS.

DESC. *Body* filiform, cylindrical, of twelve equal segments (exclusive of the head), of a clear faint water green colour, smooth, and somewhat corneous. *Head* distinct, subquadrate, sparingly ciliate on the margins. *Antennæ* two, short, inarticulate, setaceous, placed in front. When in motion it is seen incessantly to protrude and retract two strong hooked *mandibles* of a brown colour. No *proboscis*. *Eyes* two, black, remote, not marginal, placed on the anterior portion of the head. On the front and ventral margin of the first segment are two prolegs, short, unjointed, armed with retractile claws: and the last segment is as it were divided into two similar but larger foot-like processes, the margins of which are surrounded with a circle of strong yellow retractile hooks, resembling those of the prolegs of some caterpillars. (Kirby and Spence, Pl. xviii. fig. 11.) The other segments are naked, if we except a few hairs on the dorsum of the last but one. Length four lines.

*Hab.* Amongst confervæ in pools left by the tide, common.

*Obs.* This animal moves with considerable quickness by means of its mandibles and prolegs, for the former seem as subservient to progressive motion as the latter. It would appear that it is amongst the marine *Annelides* that we are to seek for the analogues of the caterpillars of insects. Montagu has remarked the great similitude of some of the marine animals he has described to larvæ; (Linn. Trans. xi. p. 203.) Our *Galba marina* has a remarkable resemblance to the maggot, and its habits probably correspond with some of those aquatic larvæ that inhabit tubes of extraneous matters:—while the animal just described bears a no less close resemblance to the caterpillars of some of the moth

\* Kirby and Spence's Entomology, vol. iv. p. 353.

tribe, though, being the denizen of a different element, it must of necessity differ materially both in structure and habits.

Fam. ECHIURÉES. Lamarck.

Gen. LUMBRICUS. Id.

Of this genus as it stands defined in modern systems, the *L. terrestris* is the only species which has found a place in the British Fauna. Dr. Fleming has added the *L. variegatus* and *vermicularis* of Muller, but he has given no descriptions; and as our account of them, if indeed we have met with these species, differs in some particulars, we shall present them anew to the readers of this Journal, with such other species as may have occurred to us.

1. *L. VARIEGATUS.*

1. *L. ruber, maculatus, marginibus pallidis, immaculatis, crenulatis; cingulo nullo.*

*L. variegatus.* Muller, *Verm.* I. ii. 26.

*Hab.* Fresh water ditches, amongst aquatic plants, common.

*Desc.* *Body* slender, filiform, an inch or more long, narrowed a little at each end, chiefly so at the anterior; of a reddish-brown maculated colour, with a vessel of a very fine ruby-red colour running down the middle; the margins are straw-yellow and finely crenulate. A row of very short retractile spines extends along each side.

The natural or ground colour of the body seems to be a straw-yellow; and the red is variable in extent, and in the character of the markings. The quadrangular brown spots arranged along each side of the central vessel, as described by Muller, are often very obvious, but only in individuals which seem to have wanted food for some time; and more commonly the spots are very large, appearing almost to coalesce, and losing altogether the regular pinnate character. They seem to arise from terrene matter in the intestines, and vary of course according to the quantity of the contents. The colour of the central vessel is always alike, and the irregular movements of a fluid in it are very perceptible. There is in most specimens an indentation more or less deep on

some part of the body, the commencement probably of a separation of parts, which may eventually become new individuals. The lateral spines are seldom obvious, being rarely protruded, and when so, being very speedily again withdrawn. We certainly have never been able to perceive more than one series on each side.

### 2. *L. PELLUCIDUS*.

2. *L. pellucidus, immaculatus, bifariam aculeatus: aculeis longis, conicis, non retractilibus: cingulo obscuro.*

*Hab.* Fresh water ditches, amongst Lemnæ, common.

*DESC.* Body four or five lines long, very slender, filiform, perfectly transparent and uncoloured, but marked with a large tortuous intestine which is seen running from one extremity to the other. Along each side is a row of long bristles which are apparently not capable of retraction. *Head* a little pointed. *Anus* terminal and large.

This animal differs from the *L. vermicularis* of Muller in the *habitat*, that species being represented as living amongst moist and decaying wood and leaves; and in the *setæ*, which in ours are non-retractile. Muller also would surely have mentioned the great *comparative* length of these *setæ*, had his species possessed them.

### 3. *L. RUFESCENS*.

3. *L. rufescens, unicolor, subpellucidus, bifariam aculeatus; aculeis solitariis, retractilibus.*

*Hab.* The roots of the largest Fuci.

This species exactly resembles both in shape, colour, and motions a small earth-worm. When extended it is upwards of an inch in length, tapered towards each extremity, round, annulate, with a very short spine on each side of every ring, which is visible only when the animal is contracted. The colour is reddish-brown, and pellucid, so that the tortuous course of the intestine is apparent. The anal segment is rather abruptly narrowed, and scarcely emarginate.

We cannot refer this animal to the *L. tubifex* of Muller, as that is a fresh-water species.

4. *L. MINUTUS.*

4. *L. "rubicundus; cingulo elevato pallido ferè medio; ventre bifariam aculeato."*

*Lamarck, Hist. Nat. v. 299. "Fabr. Faun. Groënlandica, p. 281. f. 4."*

*Hab.* Sea shore, under stones and at the roots of Fuci, common.

*DESC.* *Body* filiform, slender, slightly attenuated at both ends which are alike, one inch long, reddish, the colour proceeding from a tortuous vessel shining through a transparent skin. On each side of each segment is a small fascicle of short *setæ* only occasionally extended. When magnified the sides appear minutely crenulate. Towards the middle is a broad ring distinguished merely by its lighter colour.

I have not the *Fauna Groënlandica* to refer to, but so far as I remember, the figure will answer for our species, which appears to us to be decidedly the same as that of Fabricius.

5. *L. LITTORALIS.*

5. *L. ruber aut rubro-maculatus, filiformis; aculeis uniserialibus, fasciculatis, retractilibus.*

*L. ciliatus? Muller, Verm. I. ii. 30.*

*Hab.* Sea shore, under stones and at the roots of Fuci, not uncommon.

*DESC.* This species is very slender in proportion to its length. The *Body* is rather more than an inch long when contracted, but capable of being drawn out to nearly six times that length, filiform, somewhat attenuated at the extremities, distinctly annular, with a minute tuft of retractile *setæ* on each side of every segment. The colour is a uniform red, but it is broken when the body is in a state of extension, and becomes pale or spotted. The animal is contractile, and frequently thrown into partial swellings.

In his description of the *L. ciliatus*, Muller says there are four fascicles of bristles at each ring; but the difference in our descriptions may arise not from a difference in species, but from the



difficulty of ascertaining this point with any degree of accuracy. The very existence of the fascicles is not always possible to be ascertained, and we must acknowledge that we have seen them only on the anterior half of the body. They issue from the middle of the segment, and not from the joints.

## 6. L. LINEATUS.

## 6. L. "albus lineâ longitudinali rubrâ."

L. lineatus. Muller, *Verm.* I. ii. 29.

*Hab.* Sea shore, under stones in muddy places.

*DESC.* A slender worm, quite smooth, annular, filiform, marked longitudinally with a zig-zag line of a fine red colour. Under the magnifier this is seen to be produced by a blood-vessel which runs, one on each side, nearly the length of the body. Length from one to two inches.

Though the above descriptions relate to minute species, and of simple structure, they are not perhaps on that account the less worthy of being recorded. They form a large addition to the genus, and yet probably other natives remain to be discovered, for observation inclines me to believe that one or more distinct species have been hastily considered as varieties of the common earth-worm.

Ord. ANTENNÉES. Lamarck.

Fam. APHRODITES. Id.

Gen. PALMYRA? Savigny.

## PALM. OCELLATA.

*DESC.* *Body* linear, four lines long, scarcely one in breadth, truncate before, a little narrower behind, compressed. *Antennæ* five, conical, the external twice as long as the three intermediate. *Proboscis* short, retractile, surrounded at the apex with a row of teeth. No *maxillæ*; nor were the *eyes* perceptible. *Dorsum* light-coloured, unspotted, without scales. *Sides* dusky, with a row of circular light-coloured spots down each. Most of these

spots are ocellated. *Abdomen* of a uniform straw-yellow, with a visceral stain in the middle. *Segments* numerous, each with a papillary foot armed with a fascicle of unequal bristles. *Anal segment* terminated by two short conical filaments of similar structure to the antennæ.

*Hab.* Amongst fuci, rare.

*Obs.* The motion of this animal is very slow. It is readily distinguished by its light-coloured back, and regularly spotted sides. It has the habit of the *Polynoe*, under which genus I had placed it in my note book, but in its characters it corresponds better with the *Palmyra*; though having seen no other species, I cannot say with what propriety it is described as such. I have carefully compared it with the descriptions of *Aphroditæ* of British authors, from all which it is quite distinct. May it not be the *Nereis maculosa* of Montagu?

#### GEN. POLYNOE. Savigny.

Of the *Aphroditæ* five species are enumerated in the Compendium of Dr. Turton. Three other species have been since added,—the *A. imbricata* by Professor Jamieson, and the *A. clava* and *viridis* by Mr. Montagu. Of these, one enumerated by Dr. Turton, (*A. aculeata*,) belongs to the modern genus *Halithea*. It is uncertain to what genus another, (the *A. annulata*,) ought to be referred. The species which remain are referable to the genus *Polynoe*, Sav., but their descriptions, with the exception of those of the *A. clava* and *viridis* of Montagu, are so imperfect, that it has become impossible to identify them with any certainty. Under these circumstances, I have thought an accurate account of three species which are common in this neighbourhood, and which are all perhaps already known, ought not to be considered out of place in these contributions, which have for their object as much the amendment of what is known, as the addition of what is new. I have to regret however that, in my attempt to elucidate these species, I have not been able to avail myself of the works either of Pallas or of Bosc.

1. *P. SCABRA.*

1. *P. oblongo-linearis, cinerea, scabra; squamis duodecim paribus, imbricatis, ovatis, granulatis, margine externo ciliatis, non deciduis.*

*Aphrodita scabra.* Fabricius, *Faun. Groën.*, p. 311.  
*Turt. Linn.* iv. p. 80. *Turt. Comp.* 136. *Stewart's Elements*, i. p. 387.

*Hab.* The sea : common on the British shores.

*Desc.* *Body* rather more than an inch long, depressed, linear-oblong, of equal breadth at both ends, of a uniform cinereous colour, and roughish. *Scales* twelve on each side, rather large, imbricate, ovate, granulate, ciliated on the external margin. The anterior are smaller than the others, and completely cover the head, which is a small, subtriangular, pink coloured or purple corneous plate furnished with four small eyes. *Lateral tentacular filaments* white, with a blackish ring at the bulb where the acumination commences. *Feet*, twenty-four or twenty-five on each side with a few fleshy spines on their inferior aspect, armed with a row of strong short straw-yellow metallic bristles. *Ventral surface* smooth, straw-colour, prismatic, marked with the viscera, and sometimes spotted with black near the base of the feet. *Tail* with filaments.

This species differs remarkably from those which follow in the tenacity with which the dorsal scales adhere. Those species are deprived of them by the slightest friction, or even by simple immersion in fresh water, but in the species now described they are only to be removed by force, and are often torn in the attempt.

Of the synonymes quoted we are certain only of that of Fabricius. In the descriptions of Turton and Stewart there are some particulars which will not apply to our animal, and yet it is probably the species they intended. We follow Turton in placing here the *pedunculata* of Pennant. Mr. Stewart makes it synonymous with his *A. plana*, and it is impossible, either from the description or figure, to say which is right.

2. *P. IMBRICATA.*

2. *P. oblongo-linearis*, lævis; squamis quindecim paribus, ovatis, imbricatis, spinis brevissimis, deciduis.

*Hab.* The sea, under stones between low and high-water mark, common.

*Desc.* *Body* elliptical, depressed, about one inch and a half long, three or four lines broad, rounded and obtuse at each extremity where it is of equal breadth. It is of a cinereous colour on the back, mottled, and marked along each side with a row of small light spots, one to each scale. The *head* is generally concealed under the anterior scales: it is a red square or rather heart-shaped corneous plate, emarginate in front, furnished with four small eyes. *Scales* fifteen on each side, imbricate, ovate or kidney-shaped, the anterior nearly circular, variegated with blackish irregular markings, and thickly punctured with small circular white dots. When first examined they appear smooth, but they are in fact covered with very short spines or processes visible only in certain lights or near the margin. Each scale is fixed to a little fleshy *papilla* on the back, the rest of the scale being detached. There are about twenty tentacular filaments on each side, with a dark ring at the bulb, and blackish about the base. *Feet* about thirty-five on each side with a single fleshy spine beneath. *Bristles* yellow, stiff and metallic. When the scales are removed the body appears spotted with black, and these spots become quite distinct and regular near the tail, which is terminated by two setaceous filaments.

This species is subject to considerable variety in colour and in size. I have described it above when full grown, and as it is generally found in this neighbourhood. In many specimens however the head is not concealed by the scales, and these individuals, it is curious, are generally of an uniform ash or chesnut-brown colour, with the scales also destitute of the beautiful variegation and spotting which so decidedly characterise the preceding. I was at one time disposed to consider it a distinct species, but further enquiries have satisfied me that it can only be considered a variety.

This I cannot doubt is the *Aphrodita imbricata* mentioned by Professor Jamieson and Mr. Stewart as common on Leith shore. I believe that the *A. punctata* of the former is a variety; nor do I hesitate to give the *A. squamata* of British authors as another synonyme. In this the scales are stated to be dotted with black, as indeed they appear to be when examined while they adhere to the animal. Whether it is the *Polynoe squamata* of Lamarck is doubtful. That species is said to have only twelve scales on each side, which are said also to be not imbricate; characters, which would seem to indicate a different species.

### 3. *P. LEPIDOTA*.

3. *P. oblongo-linearis, laevis, dorso sanguineo, lateribusque pallidis: squamis ovatis, bicoloratis.*

*Aphrodita minuta.* Pennant.?

———— lepidota. Turton.

*Hab.* The sea, under stones, amongst Fuci, &c.

*DESC.* *Body* linear oblong, half an inch long, sometimes one inch, with a blood-red broad fascia along the back, and yellowish sides dotted with black. *Head* concealed by the scales. *Scales* fourteen or fifteen on each side, ovate, two-coloured, the one half being pink, the other half yellowish, with a roughish punctured appearance, which arises from very short spines with which they are covered, and which are visible only on the margin or in certain lights. *Feet* yellowish. *Ventral surface* perlaceous, stained with the viscera.

There can be no doubt I think of this being the *Aphrodita lepidota* of British naturalists. They have always quoted the *A. minuta* of Pennant as synonymous, but the correctness of this is very questionable, since that author takes no notice of the longitudinal red fascia, a character not likely to have been overlooked by one whose attention was solely directed to external and prominent marks, and his figure seems designed for a different species. It is certainly not the *A. minuta* of Fabricius in the *Fauna Groënlandica*, at least the recollection I have of the description of that species does not tally with ours.

However distinct the specific characters may at first sight appear, yet I entertain no doubt in my own mind of its identity with our *P. imbricata*. The scales are the same both in shape and number; nor indeed is there a character to distinguish it except the dorsal fascia; a character, probably dependent on local causes, and certainly not of itself sufficient to constitute a species. It would appear then that of this genus we have only four well ascertained species, viz. the *scabra* and *imbricata* described above, and the *clava* and *viridis* of Montagu. The others said to be British, must be re-examined before they can take an undisputed place in our Fauna.

The above descriptions, I wish to remark, are purely specific, the characters applicable to the genus being purposely omitted. These characters as detailed by Lamarck from Savigny, I must confess I do not understand. They are as follows: "*Tentacula simplicia, conica, proboscidis orificium coronantia. Maxillæ cornæ. Antennæ quinque; interdum impari nullâ. Oculi quatuor. Squamæ dorsales.*" The antennæ are defined to be *jointed* filaments inserted on the head. Such organs I have never been able to perceive, and I therefore believe them to have no existence. Nor can it with any propriety be said that the tentacula encircle the orifice of the proboscis, for they are in reality placed at the sides. The following appears to be a correct description of the parts of the head in the species observed by me.

The mouth is inferior, and from it the animal evolves, in the same manner as the snail moves its tentacula, a thick cylindrical proboscis armed with four brown hooked horny mandibles. Above it is the head, a square corneous plate emarginate in front, and bearing four small black eyes placed in a square. From its anterior margin two very short tentacula arise. These from their situation must be the antennæ of Savigny, a denomination to which I feel disposed to object, since they have nothing in their structure, nor probably in their function, analogous to the antennæ of insects. Between them there is an acicular-pointed tentaculum similar in all respects to the tentacular filaments, (*acicules* of Savigny,) which garnish the sides; and exterior to them, and a little beneath them, there is, on each side, a strong conical ten-

taculum longer than the rest, and to which the term antenna might with greater propriety be applied than to the others. Still exterior to these there are, on each side, a pair of acicular-pointed filaments. It appears then that there are nine tentacula divisible into three classes, and readily distinguishable by their figure, viz. two short and cranial; two long, conical, originating under the head; and five acicular-pointed, which probably spring from the body, but which differ from their lateral analogues in being non-retractile. It might be proper to designate these by distinctive names; but however we call them or divide them, we shall not be able to make them coincide with the characters of Lamarck.

Fam. NÉRÉIDÉES. Lamarck.

Gen. SPIO? Id.

/ SPIO VULGARIS.

DESC. *Body* three inches in length, vermiform, depressed, quadrangular, narrowed a little at the head, tapered gradually towards the anal extremity, of a yellowish brown colour, stained longitudinally on both surfaces with the large intestine, and marked transversely with numerous close-set dark-red striæ. *Mouth* terminal, inferior, with black margins. From it projects a *triangular process*, the base of the triangle being outwards, and each angle produced into a conical process. This process is retractile. *Head* small, slightly emarginate in front, marked above with three black spots or lines, and *four* very small *eyes* placed thus (···) *Antennæ* two, setaceous, white, obscurely spotted, half an inch long, approximate at the base, placed on the vertex, contortile, and capable of being rolled up in a spiral form. *Segments* very numerous. Each segment has on each side, affixed to its dorsal margin, a subulate *branchial process*, nearly as long as the breadth of the animal, of a fine red colour, and sometimes spotted. These, when in water, are raised and extended, and in perpetual motion, but when at rest or removed from the water, they are laid obliquely across the back, their points meeting in the middle, and hence give the animal the appearance of being marked with transverse striæ. Beneath these are placed the *feet*, viz. a papilla divided into two processes, one of which is simple,

the other armed with a brush of soft hairs. No *bristles*. The *branchiæ* are not retractile; the *feet* are probably so. *Anus* terminal, stellated, or surrounded with eight short simple processes, which assume a star-like form. *Intestine* apparently large, dilated at each segment, simple, filled with dark mud-like matter.

The *Spio vulgaris* inhabits the sea shore, and the margins of our river, a little below high-water mark. It prefers a soil composed of sand and mud, and in which the latter rather preponderates. It is found lurking under stones, or burrowing in the soil, and in the latter situations, the surface to a great extent is seen full of small round perforations, and covered with little heaps of its tubular and spiral excrements. When disturbed it descends in its furrow with great rapidity, and to a considerable depth; when taken it throws itself into violent contortions, during which the body generally separates into several portions, or loses its antennæ, which always separate at their very base. Their several portions retain their vitality for at least some days, which they evince not merely by their contortions when pricked, but even by moving from one place to another. The animal is used in this neighbourhood as a bait to take the fry of the Coal-fish,—here called Poddies.

It is difficult to believe that so very common an animal, and one too of a considerable size, should have remained unknown and undescribed up to this time. It is certainly however not mentioned in the British Fauna of Dr. Turton, who professes to describe all the species known up to 1807; nor does it occur in the last edition of the British Zoology of Pennant, in which the species discovered up to the period of its publication in 1812, are said to be given. Lamarck has four species of the genus, but the characters of none of them correspond with that to which, from its commonness, I have attached the specific name *vulgaris*.

#### NOTE.

A few days since a specimen of the *Callionymus Dracunculus* was brought me, which on dissection was found to contain a *milt*, or in other words was a *male*. I mention this fact, as it seems opposed to the opinion of Mr. Neill, who believes this species and the *C. Lyra* of authors to be merely the different sexes of the same animal; as he has found “the gemmeous dragonets (*C. Lyra*) to be uniformly *milts*, and the sordid dragonets (*C. Dracunculus*) to be uniformly *spawners*.”—Wern. Memoirs, vol. i. p. 530.

[To be continued.]



ART. XXXIV. *Observations on the Animals of some species of Bullæa, Lam.; and on some species of the Annelida.* By WILLIAM CLARK, ESQ.

[To the Editor of the Zoological Journal.]

SIR,

DURING my residence at the sea side, in the Summer months, I have employed my leisure time in forming a collection of British Shells, and in examining the animals inhabiting them. To obtain them I engaged an expert dredger, and by this means I have procured nearly the whole of our marine indigena in a living state, recovered many long lost species, and added some new ones to our catalogues. Perhaps the following observations and descriptions of some of the animals of the genus *Bullæa*, which are found in our seas, and which I believe have never before been observed by any writer on this subject, as well as a few brief references to some other marine animals, may be considered interesting to those who have turned their attention to this branch of natural history, and particularly to the collector of our native *Testacea*. If this should be your opinion, you are at liberty to make any use of them you may think proper.

I am, Sir,

Your obedient servant,

WILLIAM CLARK.

Bath, October, 1827.

Fam. BULLADE.

Gen. BULLÆA. *Lamarck, Anim. sans vert. ? vi. Tom. (p. 2.) p. 29.*

1. BULLÆA CATENA.

*Bulla Catena. Mont., Test. Brit. p. 215. Tab. 7. fig. 7.*  
et auct. aliorum.

Char. Spec. *Animal* suprâ flavo-albidum; clypeus vel pars anterior, et pedis lobi laterales, punctis rufo-brunneis, minutis, creberrimis, quasi arenâ, adpersi. Posterior margo corporis digitatus. Long.  $\frac{5}{20}$  unc. Lat.  $\frac{3}{20}$  unc.

*Testâ* ovato-oblongâ, tenuissimâ, albidâ, nitidâ, striis transversis catenatis notatâ, latere columnari arcuato, apice sub-obtuso, vix umbilicato. Long. plusquam  $\frac{1}{8}$  unc. Lat.  $\frac{1}{10}$  unc.

*Animal* on the upper part yellowish white, the shield or anterior portion, and the lateral lobes caused by the reflection of the foot on the back, sprinkled with close set, very minute, reddish brown points. The posterior part of the body divided into one or two digitations. Length of the animal when in motion  $\frac{5}{20}$ ths inch; breadth,  $\frac{3}{20}$ ths inch.

*Shell* oval-oblong, very thin, white, pellucid, shining, marked with chain-like transverse striæ. Columellar margin arcuated; apex rather obtuse, scarcely umbilicated. Length, more than  $\frac{1}{8}$ th; breadth  $\frac{1}{10}$ th inch.

I believe that the animal which contains this very beautiful shell has never before been met with by any Conchologist. The specimens in cabinets are usually procured from fine sand. I had the good fortune to obtain a number of these animals, and some of the next species, alive, at Exmouth and Torquay, from pools at the time of the lowest spring tides; some of these I preserved in spirits, and others I kept alive some hours in sea water for dissection and observation.

The animal is a Lamarckian *Bullæa*, having the body convex above, divided transversely into two portions, with the margins of the foot reflected upwards on each side of the back, giving the animal the appearance of being quadrilobated: it has no distinct head, eyes, or tentacula; the respiratory organs are quite at the posterior extremity covered by the shell, and the admission and expulsion of the water to and from these, by the dilatation and contraction of that part, was very perceptible. The use of the digitations of the hind part of the body, I plainly observed, was for the purpose of assisting the animal in its movements. It is furnished with a strong gizzard composed of three similar angular testaceous plates sharply pointed at each end. The shell of this species, in its catenated striæ and general shape, is not unlike the *Scaphander catenatus* of Dr. Leach, dredged at Scarborough, which I presume (not having seen the animal) is a *Bullæa*; but this is quite distinct.

2. *BULLÆA PUNCTATA*.

*Bulla Punctata*. Adams, *Linn. Trans.* 5th vol. Tab. 1. fig. 6, 7, 8.

Char. Spec. *Animal* suprâ cinereo-nigrum, pede flavo-albido. Corpus posticè digitatum. Long.  $\frac{2}{10}$  unc. Lat.  $\frac{1}{10}$  unc.

*Testâ* ovato-oblongâ, tenuissimâ, albâ, pellucidâ, nitidâ, lineis transversis punctatis, latere columnari arcuato, apice obtuso vix umbilicato. Long.  $\frac{1}{10}$  unc. Lat. minus quam  $\frac{1}{10}$  unc.

*Animal* cinereous approaching to black; body posteriorly digitated, yellowish white. Length  $\frac{2}{10}$ th inch. Breadth  $\frac{1}{10}$ th inch.

*Shell* oblong, very thin, white, pellucid, glossy, marked with transverse dotted lines; inner margin arcuated; apex obtuse with a very shallow umbilicus. Length  $\frac{1}{10}$ th inch. Breadth less than  $\frac{1}{10}$ th inch.

Montagu never saw this shell, and in consequence he placed it, though with doubt, as a synonym of his *Bulla Catena*; but both the animal and shell are eminently distinct. The colour of this species is almost black, and it is much smaller than the preceding; but the most decided mark of distinction is, that it has not a gizzard furnished with testaceous appendages like *B. Catena*, but has merely a skinny cylindrical tube. Its general shape almost in all respects resembles the last species; the apex however is more obtuse. This shell instead of the chain-like striæ, has transverse lines formed of distinct dots as represented in Adams's figures, which are otherwise very ill executed. This animal is found in company with *B. Catena*, but is much more rare.

3. *BULLÆA PRUINOSA*.

*Animal* suprâ et infrâ albidum, pede permagno. Corpus posticè digitatum. Long.  $\frac{7}{10}$  unc. Lat.  $\frac{3}{10}$  unc.

*Testâ* subglobosâ, niveâ, subopacâ, subtiliter reticulatâ, peripheriâ paululum constrictâ, margine columnari arcuato, reflexo, ad mediam partem subemarginato, apice subrotundato, levitèr umbilicato. Long.  $\frac{3}{10}$  unc. Lat. plusquam  $\frac{2}{10}$  unc.

*Animal* entirely white, foot very large. The body behind is divided into two or three digitations. Length  $\frac{7}{10}$ th inch. Breadth  $\frac{3}{10}$ th inch.

*Shell* subglobose, subopake, of a dead frosted white colour, delicately reticulated, appearing covered with fine gauze; the circumference of the posterior or upper part is somewhat constricted, as if a thread had been tightly tied around it. The columellar margin is arcuated, a little reflected, and in the middle of it is a flexure or notch; apex rather rounded and slightly umbilicated. Length  $\frac{3}{10}$ th inch. Breadth, more than  $\frac{2}{10}$ th inch.

Six of these beautiful *Bullææ* were dredged alive off Budleigh Salterton, Devon, in August 1827, and I believe belong to an entirely new species. This I have named *pruinosa*, in consequence of its frosted snowy colour. At the first view of the shell I thought it might prove to be either the long lost *Bulla denticulata*, or *B. emarginata* of Adams, (Linn. Trans. 5th vol.); but on comparing it with that gentleman's description and figures, I find it distinct. This species is rather more rolled up than any of its congeners; it resembles much in shape a young *Bulla Hydatis*, and seems to be the connecting link of the *Bullææ* with the *Bullæ*. The foot appears very large when not reflected on the back of the animal, and the hind margin of the body is more digitated than in either of the last species. The animal flaps the sides of the foot upwards and downwards, as if beating the water, with considerable quickness, especially when first taken from the sea. No gizzard could be detected after the most careful examination with a good lens. This appears to be a rare species, and only occasionally to be procured by deep dredging seven or eight miles from the shore. Some individuals are marked with a more or less wide, chesnut coloured, transverse band. Perhaps it may be said, that two genera ought to be formed of the preceding species, in consequence of one of them being provided with a testaceous gizzard, and the others not having any testaceous appendages. I am not of this opinion, as it cannot be doubted but that all have a gizzard, though in some it is only of a coriaceous or skinny nature: if this distinction was admitted, dissection alone could distinguish the animals, as the external appearances are the same in those furnished with tes-

taceous appendages to the gizzard, as in those which are without them.

In addition to what the Rev. R. T. Lowe has observed in the 9th number of the Zoological Journal respecting the minute *Cephalopoda* of Lamarck, and in confirmation of Mr. Gray's idea, that most of them belong to the *Annelida*, I have to state that in August last I obtained *alive* from Fuci the *Vermiculum intortum*, *V. subrotundum*, and the *V. bicornis* of Montagu, which I believe answer to Lamarck's *Miliola planulata*, *M. planulata b. turgidula*, and *M. trigonula*; and at the same time, a species new to the British collector, which I consider to be Lamarck's *Miliola planulata c. planissima*. These shells I immediately immersed in sea water, and on my return home I placed some of them, still adhering to bits of *Fuci*, in my watch glass in water; I then clearly perceived the animal to protrude a part of its body, on the sides of which I thought I could discover a plumose appendage, but from the extreme minuteness of the part, and the want of power in my lens, though one of Dollond's best, I was not enabled to make out satisfactorily the nature of the organs. On grinding down the shell, the animal was clearly to be seen of a red colour filling up its cavities. These facts I conceive decidedly prove that the *Miliolæ*, which have hitherto been thought to be enclosed in an animal, are external shells, and inhabited by their animals; and as these are of a red colour, it may be presumed they belong to the *Annelida*, as Lamarck and Savigny state the animals of that family to have red blood.

When the *Discorbis vesicularis*, (*Serpula lobata*, Montagu,) which is an external sessile chambered shell, and is found alive in great quantities on shells and Hydrophytes, is examined immediately after being taken from its native element, the animal appears of a red colour, and its segments, filling up the chambers, may easily be perceived through the tenuity of the shell. I have therefore very little doubt but it will prove to be one of the *Annelida*. The same red appearance of the animal I have observed in the *Nautilus Beccarii* when adhering to *Pectens*.

There is also another circumstance attached to the elongated

*Nautili*, (the *Orthocerata* of Lamarck,) which strongly proves that these shells cannot be internal ones; that is, the various shapes of the same species. I have in my cabinet more than thirty specimens of Montagu's *Nautilus Legumen*, which he has figured in Test. Brit. from a broken shell, and described as surrounded by a rim or margin; this is never the case except when some of the anterior chambers are wanting; then it has that appearance; but when perfect, the aperture gradually tapers to a striated termination. Montagu has also from the varieties of this shell formed several distinct species; for example, his *Nautilus rectus* is only a straight and cylindrical variety; and his *N. subarcuatus* is another variety, having the three anterior chambers more globose than the others. Of my thirty specimens, there are not two alike in shape, some being straight, cylindrical, with the chambers more or less inflated, and having an extremely sharp posterior termination; some being flat, arcuated, and obtuse; and others so distorted as to form right angles.

Though nature varies in the outward forms of animals of the same species, I believe that no particular internal part or bone ever varies much, if at all, in form. The bone of the *Sepia officinalis*, or of the *Loligo vulgaris*, is always of an uniform shape. From these circumstances it may be inferred that the *Orthocerata* cannot be internal shells, inasmuch as of the species *O. Legumen*, scarcely two can be found alike. These facts appear to go far in proving that most of the discoid and elongated polythalamous shells called *Nautili* by the old writers, do not belong to the *Cephalopoda*, but are much more closely allied to the *Annelida*. The very shape of the shells divided by septa into segments, coupled with the facts above mentioned, sanction the idea that they are inhabited by animals of the *Annelida*.

The day before my departure from the sea side, I obtained alive a fine specimen of the *Turbo Clathratulus* of Montagu, which is a *Scalaria* in M. Lamarck's arrangement, belonging to the division "*Scalariens*," and forms a part of his first section of the *Trachélipodes*, "sans siphon saillant," and which are generally Phytophagous. The animal I found to be Zoophagous, having a distinct long retractile proboscis, with a very short siphon

to conduct the water to the branchiæ. This genus seems to be the connecting link of those animals which have the aperture of their shells entire, with those that are channeled; in fact it may be considered as the commencement of the *Zoophagi*, having shells with a canal at their base (though here it is scarcely perceptible), and which is continued and becomes more developed in the *Cerithiadae*. It also affords a beautiful illustration of the almost imperceptible gradations by which Nature passes from one system of form to another; for in this genus, the aperture being almost entire shews that it has still something in common with that class of shells it is about to leave, and the evident rudiments of a canal connect it with that class it is about to enter.

The shell of *Scalaria Clathratula*, (*Turbo Clathratulus*, Mont.,) appears very distinct from that of *Scalaria Clathrus* or *S. communis*, but the external organs of the animals inhabiting the three species are alike; the only difference consists in colour, which in the *S. Clathratulus* is quite white, or pale yellowish white, whilst in the two others, it is dark purple or black.

---

ART. XXXV. On several Groups and Forms in Ornithology,  
not hitherto defined. By WILLIAM SWAINSON, Esq.,  
F.R.S., F.L.S., &c.

[Concluded from p. 175.]

Family Fringillidæ.

Sub-family Alaudina.

\*Rostrum forte, subcylindricum, immarginatum, rectum, naribus plumulis setaceis obtectis; rictu sub-barbato. Pedes subfortes; halluce forti, ungue recto.

ALAUDA.

Rostrum breve, subconicum.

Alæ longæ; remigibus 1mâ, 2dâ, et 3tiâ ferè æqualibus, longissimis,

Cauda sub-furcata.

344 Mr. Swainson on several new groups in Ornithology.

*Bill* short, somewhat conic. *Wings* long; the first, second and third quills nearly equal and longest. *Tail* divaricated.

*Type.* *Alauda arvensis.* Linn.

\*\* *Rostrum subforte, compressum; culmine arcuato: naribus subnudis, membranaceis; aperturá ovali: rictu imberbi.*

### MACRONYX.

*Rostrum mediocre, rectum; culmine leviter arcuato; naribus nudis, magnis, aperturá oblongá.*

*Alæ breviusculæ, remigibus 1<sup>má</sup>, 2<sup>dá</sup>, 3<sup>tiá</sup>, et 4<sup>tá</sup> æqualibus, longissimis.*

*Cauda sub-rotundata.*

*Pedes elongati; tarsi squamis lateralibus integris, hallucis ungue longissimo, curvato.*

*Bill* moderate, straight, the culmen slightly arched. *Nostrils* naked, large, the aperture oblong. *Wings* rather short, the four first quills equal and longest. *Tail* slightly rounded. *Feet* long; the lateral scales of the tarsi entire; the nail of the hind toe very long and curved.

*Type.* *L'Alouette Sentinelle.* Levaill., Ois. pl. 195.

### CERTHILAUDA.

*Rostrum mediocre, gracile, arcuatum; naribus subrotundatis.*

*Alæ . . . . .?*

*Cauda sub-brevis, æqualis.*

*Pedes mediocres; hallucis ungue brevi, recto.*

*Bill* moderate, slender, curved. *Nostrils* roundish. *Wings* . . . . ?

*Tail* rather short, even. *Feet* moderate; nail of the hind toe short, straight.

*Type.* *L'Alouette Sirli.* Levaill., Ois. pl. 192.

My specimen of this bird is deficient in some of its quill feathers.



BRACHONYX.

*Rostrum breve, rectum, compressum ; culmine leviter arcuato.*

*Alæ breviusculæ ; remige 1<sup>m</sup>a brevissimá, 2<sup>d</sup>a, 3<sup>ti</sup>a, 4<sup>t</sup>a, et 5<sup>t</sup>a feré æqualibus, longissimis.*

*Cauda mediocris.*

*Pedes longiusculi ; tarsi squamis lateralibus divisis ; hallucis ungue brevi sub-recto.*

*Bill* short, straight, compressed, the culmen slightly arched.

*Wings* rather short, the first quill nearly spurious, the four following of equal length and longest. *Tail* moderate. *Feet* rather long ; lateral scales of the tarsi divided : nail of the *hind toe* short and nearly straight.

Type? *L'Alouette Bateleuse.* Levaill., Ois. pl. 194.

The three last groups will probably comprehend most of the African *Alaudæ*. As yet I have not seen one species from South America, or from Australia ; but the genus *Anthus* occurs in the latter continent.

*Sub-family Tanagrina.*

TARDIVOLA.

*Rostrum breve, compressum ; culmine arcuato ; tomio sinuato.*

*Alæ brevissimæ rotundatæ ; remigibus 2<sup>d</sup>a, 3<sup>ti</sup>a, 4<sup>t</sup>a, 5<sup>t</sup>a, et 6<sup>t</sup>a feré æqualibus longissimis.*

*Cauda elongata, cuneata, vel gradata.*

*Pedes fortes.*

*Bill* short, compressed ; culmen arched ; commissure sinuated.

*Wings* very short, rounded ; the second, third, fourth, fifth, and sixth quills equal and longest. *Tail* long, graduated or cuneated. *Feet* strong.

Type. *Emberizoide longibande.* Temm., Pl. col. p. 114. f. 2.

I am already acquainted with four species of this group, which is peculiar to South America. It bears much analogy to the *Maluri* of M. Temminck ; but its true affinity will be found

among Tanagers; and not far removed from *Spermagra*. I know not whether the description of the plate above quoted has ever been published. M. Temminck promised to send it me when it was. I define the genus, because I discovered it in Brazil eight years ago; but the priority will, of course, belong to that name which is first published.

#### SPERMAGRA.

*Rostrum sub-breve, validum, crassum, compressum, tomio sub-recto, basi subangulato.*

*Alæ mediocres vel breviusculæ, rotundatæ, remigibus 4<sup>tâ</sup> et 5<sup>tâ</sup> æqualibus, longissimis.*

*Cauda mediocris, lata, rotundata.*

*Pedes longiusculi, fortes.*

Of this group, numerous as it is in species, I cannot cite a typical example. It contains part of the birds forming the genus *Saltator* of M. Vieillot; and part of those he has arranged with the true *Tanagræ*. *Saltator*, in fact, is an artificial group; and the name, moreover, has been already used in Entomology. *Spermagra* appears to form the connection between *Pytilus*, Cuv., and *Ramphopsis*, Vieill. The point of junction with the latter group, seems made by a bird now before me, which is probably the *Tanagra gularis* of Latham.

#### TANAGRA.

*Rostrum sub-breve, crassiusculum, convexum; tomio sub-sinuato: naribus rotundatis, sub-nudis.*

*Alæ mediocres, sub-attenuatæ; remigibus 2<sup>dâ</sup> et 3<sup>tâ</sup> ferè æqualibus longissimis.*

*Cauda æqualis.*

*Pedes mediocres, vel breviusculi.*

*Bill* rather short, somewhat thick and convex: the margins slightly sinuated; nostrils round, nearly naked. *Wings* moderate, the second and third quills longest and nearly equal. *Tail* even. *Feet* moderate, or rather short.

Type. *Tanagra episcopus*. Linn.

The well known Bishop Tanager will exhibit the above characters in full perfection. It is however necessary to observe, that five very distinct species pass current among Ornithologists under that name. Its natural situation is between *Pyrranga*, and the next group; this latter transcession being apparently effected by *T. multicolor*, Vieill.

### AGLAÏA.

*Rostrum breve, parvum, compressum; naribus plumulis obtectis.*  
*Alæ longiusculæ; remigibus 2dâ, 3tiâ, et 4tâ æqualibus, longissimis.*  
*Cauda æqualis.*

*Bill* short, small, compressed; nostrils concealed by velvet-like feathers. *Wings* rather lengthened; the second, third, and fourth quills equal and longest. *Tail* even.

Type. *Tanagra Tatao*. Linn.

These lovely birds are connected to the true Tanagers by the *Tanagra Braziliensis*, Linn., and pass into the genus *Euphonia* of M. Vieillot.

### Sub-family Passerina?

### MEGALOTIS.

*Rostrum breve, compressum, integrum; culmine arcuato: naribus plumulis obtectis.*

*Alæ mediocres; remige 1mâ spuria, 2dâ, 3tiâ, et 4tâ æqualibus longissimis.*

*Cauda mediocris, sub-furcata.*

*Pedes debiles.*

*Bill* short, compressed, entire; culmen arched; nostrils concealed by feathers. *Wings* moderate; the first quill spurious; the second, third, and fourth, equal and longest. *Tail* moderate, slightly forked. *Feet* black.

Types. *Fringilla otoleucus, cruciger*. Temm., Pl. col. 269.

The spurious quill denotes the bird to belong to the old world. The two species above quoted inhabit India.

CRITHAGRA.

*Rostrum breve, sub-conicum, crassum, integrum; culmine arcuato; tomio curvato.*

*Alæ sub-elongatæ; remigibus 1<sup>má</sup>, 2<sup>dá</sup>, 3<sup>tiá</sup>, et 4<sup>tá</sup> æqualibus, longissimis.*

*Cauda mediocris, sub-furcata.*

*Bill* short, sub-conic, thick, entire; *culmen* arched; *commisure* curved. *Wings* lengthened; the first, second, third, and fourth quills equal and longest. *Tail* moderate, slightly forked.

*Types.* *Lox. sulphurata, flaviventris.* Lath.

Africa only? In the valuable collections of my friend Mr. Burchell, are numerous examples of this form.

SPERMOPHILA.

*Rostrum breve, crassissimum, integrum; culmine arcuato; tomio curvato.*

*Alæ breves, rotundatæ; remigibus 1<sup>má</sup> et 7<sup>má</sup> æqualibus, longissimis.*

*Cauda mediocris, rotundata.*

*Bill* short, very thick, entire; *culmen* arched; *commisure* curved. *Wings* short, rounded; the first and seventh quills equal and longest. *Tail* moderate, rounded.

*Types.* *Pyrrhulæ falcirostris, cinereaola.* Temm., Pl. col. p. 11.

This is a South American group, and does not appear to extend further North than Mexico. Between the three last genera a general similarity prevails in the shape of the bill, but in other respects they are very different.

AMMODRAMUS.

*Rostrum mediocre, validum, conicum, leviter emarginatum: tomio sinuato, basi angulato.*

*Alæ breves rotundatæ; remigibus 1<sup>má</sup> et 5<sup>tá</sup> æqualibus; 2<sup>dá</sup>, 3<sup>tiá</sup>, et 4<sup>tá</sup> æqualibus, longissimis.*

*Cauda gracilis, gradata, vel rotundata; reatricibus angustis, attenuatis.*

*Pedes graciles, longiusculi; unguibus gracilibus subcurvatis; hallucis producto.*

*Bill* moderate, strong, conic, slightly notched; commissure sinuated, the base angulated. *Wings* short, rounded; the first and fifth quills equal; the second, third, and fourth equal and longest. *Tail* slender, graduated or rounded, the feathers narrow and pointed. *Feet* slender, lengthened; nails slender, that of the hind toe rather long.

Type. *Fringilla caudacuta*. Wilson, 4. Pl. 34. f. 3.

This is a very remarkable group, comprising no less than six species, now before me. It occurs both in North and South America, and insensibly leads to another genus closely approximating to the European Sparrow, but whose characters I have not yet sufficiently investigated.

#### AMADINA.

*Rostrum breve, magnum, conicum, immarginatum.*

*Alæ breves, rotundatæ; remige 1<sup>m</sup>a spuria, minutâ, 2<sup>d</sup>a et 3<sup>ti</sup>a ferè æqualibus, longissimis.*

*Cauda brevis, æqualis vel subrotundata.*

*Bill* short, large, conic, entire. *Wings* short, rounded; the first quill spurious and very small; the second and third nearly equal and longest. *Tail* short, even, or slightly rounded.

Type. *Loxia fuscata*. Gmelin. Brown, Ill. of Zool. Pl. 27.

#### ESTRILDA.

*Rostrum breve, conicum, immarginatum.*

*Alæ breves, rotundatæ; remige 1<sup>m</sup>a spuria, minutâ, 3<sup>ti</sup>a, 4<sup>ta</sup>, et 5<sup>ta</sup> æqualibus, longissimis.*

*Cauda subelongata, gradata.*

*Bill* short, conic, entire. *Wings* short, rounded; the first quill spurious and very small; the third, fourth and fifth, equal and longest. *Tail* lengthened, graduated.

Type. *Loxia astrild*. Linn.

This, and the preceding genus, appear strictly confined to the warm regions of the old world; and will detach a vast number of species from the *Loxia* and *Fringillæ* of Linnæus. I have endeavoured in vain to reconcile the different groups of these birds proposed by Brisson, Cuvier, and Vieillot, with any thing like a geographic or a natural arrangement; and this must be my apology for not adopting either their names or characters; the first would lead to much confusion, while the latter are artificial. The minute spurious quill, (which I have termed, for the sake of uniformity, the *first*,) seems to be an unerring indication of an African or Asiatic origin; and I find the same character in all those I have seen from New Holland. There are a few other forms, belonging to the northern latitudes of Africa and America, which, as being connected with those of Europe, require more study to define their characters than I have yet been able to give them. *Ploceus*, *Vidua*, *Estrilda*, and *Amadina* follow each other in an unbroken series.

#### GUIRACA.

*Rostrum crassissimum, conicum, emarginatum; culmine leviter arcuato.*

*Alæ mediocres, attenuatæ; remige 1<sup>ma</sup> 2<sup>da</sup> paulo brevior; 2<sup>da</sup>, 3<sup>ta</sup>, et 4<sup>ta</sup> ferè æqualibus, longissimis.*

*Cauda mediocris, æqualis.*

*Pedes breviusculi, subfortes.*

*Bill* very thick, conic, emarginate; culmen slightly curved.

*Wings* moderate, pointed; the first quill rather shorter than the second; the second, third, and fourth nearly equal and longest. *Tail* moderate, even. *Feet* short, strong.

Type. *Loxia cærulea*. Wilson, 3. Pl. 24. f. 6.

The peculiarity in the construction of the wing separates this group from all those known to inhabit the old world. In cases like the present, where such peculiarities are found to indicate, with certainty, the geographic distribution of groups, they afford the most important and unerring guides to a natural arrangement. This genus makes a near approach to *Pitylus* on one side, and to *Pyrrhula* on the other. It represents *Coccothraustes* in the new world, and corresponds to another form peculiar to Africa. It may here be observed that generic characters drawn from the comparative *size* or *strength* of the bill, unsupported by other indications, afford no clue to guide the Ornithologist towards a right knowledge of this interesting tribe. And it is probably owing to this mistaken notion, that the *Fringillæ* and *Loxiæ* of Linnæus remain to this day nearly in the same state, in which they were left by those who have been considered his disciples.

#### TIARIS.

*Rostrum crassum, elongato-conicum, acutum, sub-emarginatum; tomio sinuato.*

*Alæ sub-breves, rotundatæ; remigibus 2dâ, 3tiâ, 4tâ, et 5tâ ferè æqualibus, longissimis.*

*Cauda rotundata.*

*Bill* thick, conic, acute, slightly notched. *Wings* rather short, rounded; the second, third, fourth, and fifth quills nearly equal and longest. *Tail* rounded.

*Type.* *Fringilla ornata.* Temm., Pl. col. No. 208.

Several interesting Birds, recently received from Mexico and Brazil, render it necessary to form a genus for their reception; to which I consider *Tach. fringilloides* and *rubescens*, Sw. will more properly belong.

*Family Sturnidæ.*

*Sub-family Icterina.* Vigors.

#### DOLICHONYX.

*Rostrum breve, conicum, acutum, immarginatum.*

*Alæ longæ, attenuatæ; remigibus 1mâ et 2dâ æqualibus, longissimis.*

*Cauda scansoria, subgradata; reatricibus rigidis, abrupté acuminatis.*

*Pedes graciles, longiusculi; digitis longis; unguibus gracilibus, acutis, subcurvatis.*

*Bill* short, conic, acute, entire. *Wings* long, pointed; the first and second quills equal and longest. *Tail* scansorial; the feathers abruptly acuminated. *Feet* slender; toes long; nails acute, slightly curved.

*Type.* *Emberiza oryzivora.* Wilson, 2. Pl. 12. f. 1.

This singular bird is distinguished from all its congeners by having a tail perfectly scansorial; not merely worn, but formed precisely upon the same model as that of *Dendrocolaptes*. Its economy, minutely detailed by Wilson, renders this conformation absolutely necessary. Some few species in a neighbouring group, are said to possess, in some degree, the power of ascending reeds, &c.; this is not only probable, but what we might naturally expect to find in those intermediate species which connect two approximating forms. The tails of these birds are generally very much worn towards their extremities; but in all those I have hitherto examined, I see no reason to believe, that when perfect, they would exhibit (like that of *Dolychonyx*,) a true scansorial structure. But whether this is, or is not the fact, is of no sort of consequence, further than as affecting the extent of the present genus. It is by this form that a beautiful analogical relation is preserved between the otherwise discordant groups of *Sturnidæ* and *Picidæ*, Vig.

#### CASSICULUS.

*Rostrum sub-elongatum, compressissimum, culmine basi non depresso.*

*Alæ mediocres, remigibus 1<sup>má</sup>, 2<sup>dá</sup>, et 3<sup>tiá</sup> abrupté attenuatis, falcatis.*

*Bill* somewhat elongated, much compressed; the base of the culmen not dilated or depressed. *Wings* moderate; the three first quills abruptly narrowed and falcated.



Type. *C. coronatus*.

*C. cristatus*; *niger*; *tetricibus*, *caudâ*, *anoque flavis*;  
*rostro elongato, albescente*.

In this form are united the characters of *Cassicus* and *Xanthornus*. To the first it is more particularly connected by the construction of the nostrils, which appear as if perforated in the solid substance of the bill, by the comparative shortness of the feet, and by the thickness and curvature of the nails; both of which indicate the arborial habits of the bird; the narrowed front of the bill accords with the latter group. I suspect this type will not stand alone; yet, for the present, it may be looked upon rather as a sub-genus.

Family *Picidæ*.

Sub-family *Piciana*.

ASTHENURUS.

*Rostrum rectum, compressum, acutum.*

*Cauda gradata, debilis.*

*Alæ et pedes ut in genere Pico.*

*Bill* straight, compressed, acute. *Tail* graduated, soft. *Wings*  
and feet as in *Picus*.

Type. *Picus minutus*. Linn.

The internal structure of this curious little bird, will decide whether it forms a passage from *Picus* to the *Barbets*, or is more closely allied to the *Certhiadæ*, by means of *Yunx*.

COLAPTES.

*Rostrum mediocre, validum, compressum, culmine leviter arcuato.*

*Alæ, pedes, caudaque ut in genere Pico.*

*Bill* moderate, strong, compressed; culmen slightly curved.

*Wings, tail, and feet* as in *Picus*.

Type. *Picus auratus*. Wilson, 1. Pl. 2. f. 1.

Family *Certhiadae*.

Sub-family *Certhiana*.

*Cauda gradata, rigida.*

DENDROPLEX.

*Rostrum rectissimum.*

*Alae mediocres, rotundatae; remigibus 3<sup>ta</sup>, 4<sup>ta</sup>, et 5<sup>ta</sup> longissimis.*

I know not whether the type of this genus has been described. The living bird has all the manners of a *Picus*. Except in its perfectly straight bill, it differs not from *Dendrocolaptes*.

DENDROCOLAPTES. III.

*Rostrum longiusculum; sub-curvatum, mandibulâ superiore apice emarginatâ, vel abrupte deflexâ.*

*Bill* lengthened; the upper mandible with the tip notched or abruptly deflexed.

The same uncertainty prevents me from being able to quote a typical example of this group, as it is now restricted, although I possess four species which clearly belong to it.

XIPHORHYNCHUS.

*Rostrum gracile, elongatum, compressissimum, falcatum, immarginatum.*

*Bill* slender, long, much compressed, falcated and entire.

Type. *Dend. procurvus*. Temm., Pl. col. 28.

By this form, the passage is marked from *Dendrocolaptes* to *Certhia*. The species appear numerous. I possess four from Brazil, and three from Mexico.

OXYURUS.

*Rostrum mediocre, gracile, rectum, compressum, integrum; culmine leviter arcuato.*

*Alæ brevissimæ, rotundatæ.*

*Cauda mediocris, lata, gradata; rectricibus sub-rigidis, abruptè acuminatis.*

*Bill* moderate, slender, straight, compressed, entire; culmen slightly arched. *Wings* very short, rounded. *Tail* moderate, broad, graduated; the feathers rigid, and ending abruptly in naked points.

I believe no species of this form has been described: it occurs in the tropical latitudes of America. The feet are rather large and tolerably strong; but the hind toe is not particularly developed. The habit of the whole bird resembles that of a *Sylvia*.

### SITTASOMUS.

*Rostrum gracile, parvum, rectum, ferè emarginatum; culmine leviter arcuato.*

*Alæ mediocres.*

*Cauda sub-elongata; rigida.*

*Bill* small, slender, straight, slightly notched; culmen rather curved. *Wings* moderate. *Tail* lengthened, rigid.

Type. *Dend. sylviellus*. Temm., Pl. col. 72. f. 1?

By this form the genera *Oxyurus* and *Xenops* appear to be brought together. It possesses the rigid scansorial tail of *Dendrocolaptes*, and the more feeble bill of *Xenops*.

*Sub-family Tichodromina?*

### LOCHMIAS.

*Rostrum mediocre, gracile, compressum, sub-arcuatum, integrum.*

*Alæ breves, rotundatæ; remige 1<sup>má</sup> brevi; 3<sup>tiá</sup>, 4<sup>tá</sup>, et 5<sup>tá</sup> sub-æqualibus, longissimis.*

*Cauda mediocris, lata, rotundata, debilis.*

*Pedes graciles; tarsi elevatis, squamis anterioribus infrequentibus, lateralibus obsoletis, posterioribus frequentibus, parvis; hallucis digito medio brevioris, ungue curvato.*

*Bill* moderate, slender, compressed, slightly curved, entire.

*Wings* short, rounded; first quill short, the third, fourth, and fifth nearly equal and longest. *Tail* graduated, soft. *Legs* slender; tarsi elevated, anterior scales few, lateral scales obsolete, posterior scales numerous, small; hind toe shorter than the middle, the claw curved.

*Sub-family Sclerurina.*

SCLERURUS.

*Rostrum sub-elongatum vel longiusculum, emarginatum, obtusum; culmine versus apicem leviter arcuato.*

*Alæ mediocres, rotundatæ, remigibus 1<sup>má</sup> et 2<sup>dá</sup> gradatis, 3<sup>tiá</sup>, 4<sup>tá</sup> et 5<sup>tá</sup> æqualibus, longissimis.*

*Cauda lata, rigida, rotundata.*

*Pedes graciles, breves, digito exteriori primá phalange tenui medio conjuncto, interiore ad basin connexo; halluce gracili, sub-curvato, leviter emarginato.*

*Bill* rather lengthened, notched, obtuse: culmen elevated, and slightly curved towards the tip. *Wings* moderate, rounded; the first and second quill graduated; the third, fourth, and fifth equal and longest. *Tail* broad, rigid, graduated. *Legs* short, slender; outer toe connected to the middle toe as far as the first joint, inner toe united at the base; claw of hind toe slender, slightly curved and notched.

On these two novel and interesting forms, I shall have occasion to offer a few observations while describing the valuable acquisitions made by Dr. Langsdorff in the interior of Brazil.

*Sub-family* ————?

OXYGLOSSUS.

*Rostrum mediocre, gracile, attenuatum, rectum, emarginatum.*

*Lingua jaculatoria? apice simplici, acuto.*

*Alæ mediocres, attenuatæ: remigibus 1<sup>má</sup> et 4<sup>tá</sup> æqualibus, 2<sup>dá</sup> et 3<sup>tiá</sup> æqualibus, longissimis.*

*Cauda obtusa, debilis, æqualis.*

*Pedes graciles; halluce sublongo.*

*Bill* moderate, slender, attenuated, straight, notched. *Tongue* lengthened? the top acute. *Wings* moderate, attenuated; the first and fourth quill equal; the second and third equal and longest. *Tail* rounded, obtuse and soft. *Feet* slender, hind toe rather lengthened.

Type. *Certhia maculata*. Wilson, 3. Pl. 19. f. 3.

To the accurate observations of Wilson we are indebted for a correct knowledge of this bird, uniting the essential characters of a *Creep*er, with the external form of a *Sylvia*.

#### Family Trochilidæ.

#### TROCHILUS.

*Rostrum rectissimum.*

*Cauda mediocris, æqualis, vel rotunda.*

Types. 1. *T. superbus*, Shaw. 2. *pileatus*, Lath. 3. *collaris*, L., 4. *O. M. à double huppe*. Temm., Pl. col. 18. f. 3.

*Bill* very straight. *Tail* moderate, equal, or rounded.

#### CYNANTHUS.

*Rostrum rectum, vel sub-arcuatum.*

*Cauda longissima, forficata.*

Types. 1. *T. colubris*, L. 2. *macrourus*, L. 3. *platurus*, Sh. 4. *bifurcatus*, Sw. ined. 5. *O. M. à queue singulière*. Temm., Pl. col. 18. f. 2.

*Bill* straight or very slightly curved. *Tail* very long, forked.

#### PHÆTHORNIS.

*Rostrum elongatum, arcuatum.*

*Cauda elongata, gradata vel cuneata.*

Types. 1. *T. superciliosus*, L. 2. *Col. tacheté?* Temm., Pl. col. 120. f. 3. 3. *T. chrysobronchos*, Shaw.

*Bill* elongated, arched. *Tail* lengthened, graduated or cuneated.

### CAMPYLOPTERUS.

*Rostrum longiusculum, sub-arcuatum.*

*Alæ falcatæ ; remigum primarum scapis dilatato-compressis.*

*Cauda rotundata, vel gradata.*

Types. 1. *T. latipennis.* 2. *falcatus.* Sw., Zool. Ill.

*Bill* rather long and slightly curved. *Wings* falcated, the shafts or scapes of the primary quills dilated and compressed. *Tail* rounded or graduated.

### LAMPORNIS.

*Rostrum sub-arcuatum.*

*Cauda brevis, æqualis.*

Types. 1. *T. mango,* L. 2. *pella,* L. 3. *niger.* Sw., Zool. Ill.

*Bill* arched. *Tail* short, even.

The foregoing characters are taken from the typical examples of the five sub-families or secondary divisions, under which all the known species will arrange themselves. Whether it is expedient that the inferior groups here designated as types of form, should be characterized as genera, may be a subject for future consideration. In the above arrangement, I have found it impossible to apply the nomenclature of Brisson and Lacepède with any advantage. *Polytmus* has never been defined, and is applicable to two of the foregoing groups. *Mellisuga* or *Orthorhynchus*, as given to the typical division, is manifestly objectionable. Besides, M. Vieillot has used the first of these names in a different sense. The *Trochilidæ* appear united to the *Nectariniadæ*, by *T. pella*; and to the *Promeropidæ*, by *T. superciliosus*. I am already acquainted with more than one hundred species of this family.

*Family Muscicapidæ.*

### TYRANNULA.

*Rostrum mediocre, depressum, mandibulæ superioris apice abruptè adunco.*

*Alæ mediocres, sub-attenuatæ; remigibus 1<sup>mâ</sup> et 2<sup>dâ</sup> gradatis, 3<sup>tiâ</sup>, 4<sup>tiâ</sup>, et 5<sup>tiâ</sup> ferè æqualibus, longissimis.*

*Cauda mediocris, æqualis.*

*Pedes graciles, breves; tarsi squamis anterioribus divisis, lateralibus nullis.*

*Bill* moderate, depressed, tip of the superior mandible hooked.

*Wings* moderate, rather pointed; the first and second quill graduated, the third, fourth, and fifth nearly equal and longest.

*Tail* moderate, even. *Feet* short, slender, the anterior scales divided; lateral scales none.

Type. *Muscipeta barbata*. Sw., Zool. Ill. 2. pl. 116.

This group, containing numerous species, leads immediately to the Tyrant Flycatchers. Some few species will, of course, present deviations from these characters; yet the comparative length of the two first quill feathers separates *Tyrannula* from all the European, African, and Oriental groups; and confines the genus to the new world.

### CULICIVORA.

*Rostrum breve.*

*Alæ brevissimæ, rotundatæ; remigibus 1<sup>mâ</sup> et 2<sup>dâ</sup> gradatis, 3<sup>tiâ</sup>, 4<sup>tiâ</sup>, 5<sup>tiâ</sup>, 6<sup>tiâ</sup>, et 7<sup>mâ</sup> ferè æqualibus, longissimis.*

*Cauda gracilis, elongata, gradata.*

*Pedes graciles, longi, tarsi squamis lateralibus frequentibus.*

*Bill* short. *Wings* very short, rounded; the first and second quills graduated; third, fourth, fifth, sixth, and seventh, nearly equal and longest. *Tail* slender, lengthened and graduated.

*Feet* long, slender; lateral scales numerous.

Type. *Muscicapa stenura*. Temm., Pl. col. pl. 167. f. 3.

I possess two other undescribed species of this genus. The length of the legs indicates some peculiar economy, of which, at present, we are ignorant. The bill does not materially differ from that of the last genus, otherwise than in the tip not being so abruptly bent.

SETOPHAGA.

*Rostrum parvum; culmine carinato.*

*Alæ mediocres; remigibus 1<sup>má</sup> et 4<sup>tá</sup> æqualibus, 2<sup>dá</sup> et 3<sup>tiá</sup> æqualibus, longissimis.*

*Cauda sub-elongata, rotundata.*

*Pedes graciles, tarsi squamis anterioribus divisis, lateralibus integris.*

*Bill* small, culmen carinated. *Wings* moderate; first and fourth quills equal, second and third equal and longest. *Tail* rather lengthened, rounded. *Feet* slender, anterior scales divided, lateral scales entire.

Type. *Muscicapa ruticilla.* Linn.

I already know of four other species belonging to this group, all of which inhabit the temperate regions of America. It represents, in the new world, the Australian genus *Rhipidura*, just characterized by Dr. Horsfield and Mr. Vigors, an affinity manifested by the observations of Wilson.

Family Columbidae.

PERISTERA.

*Rostrum gracile, sub-emarginatum.*

*Alæ rotundatæ; remige primâ brevi, abrupte attenuatâ; 2<sup>dá</sup> et 5<sup>tá</sup> ferè æqualibus, 3<sup>tiá</sup> et 4<sup>tá</sup> æqualibus, longissimis.*

*Cauda rotundata.*

*Pedes fortes, nudi, sub-elongati; tarsi squamis anterioribus imbricatis, lateralibus nullis.*

*Bill* slender, sub-emarginate. *Wings* rounded, the first quill short and abruptly attenuated, second and fifth equal, third and fourth equal and longest. *Tail* rounded. *Feet* strong, naked, somewhat lengthened; anterior scales of the tarsi imbricate, lateral scales none.

Type. *Col. cinerea.* Temm.



In defining the genus *Ptilinopus*, some time ago, I took occasion to observe that the narrow and attenuated form of the first quill feather was not peculiar to all the species of that group, which rested more upon the tarsi being clothed with feathers. The first of these observations is equally applicable to the present division. In four species now before me, three only have the first quill feather abruptly narrowed. But the tarsi of all exhibit the very singular character of being destitute of scales on their sides and back; these parts being merely covered with a naked skin. Mr. Vigors has judiciously made this family the point of junction between his *Insessores* and *Rasores*: it is therefore evident that in tracing this passage, every variation in the tarsi, however slight, deserves particular attention. My collection of *Columbidæ*, except in those of the new world, is not sufficiently extensive to inform me, whether the semi-naked tarsi, and the emarginate bill of these birds will be found in any species from the old world. They do not occur, however, either in *Col. chalcoptera*, or in another kindred species which I possess from Australia, both having the bill entire, and the sides of the tarsi covered with minute, thin, and reticulated scales. Should these characters prove constant, it will be somewhat curious that *Malaconotus* should be separated from its prototype *Thamnophilus*, by a distinction precisely similar. On the other hand, conclusions cannot be drawn from such imperfect materials.

#### CHÆMEPELIA.

*Rostrum gracile, integrum.*

*Alæ rotundatæ, remige primâ brevi, 3tiâ, 4tiâ, et 5tiâ ferè æqualibus, longissimis, pogoniis utrinque sub-emarginatis.*

*Cauda rotundata.*

*Pedes sub-breves; paratarsiis plumatis.*

*Bill* slender, entire. *Wings* rounded, the first quill short; third, fourth, and fifth, nearly equal and longest, the webs on both sides slightly emarginate. *Tail* rounded. *Feet* rather short, the sides of the tarsi feathered.

*Types.* *Columbæ passerina*, Linn., *squamosa*, Temm.

This group is nearly allied to the last, both in structure and economy. The first quill feather is unusually broad and entire; and there is a narrow row of small feathers down the sides of the tarsi. All the species I have seen are from America.

### ECTOPISTES.

*Rostrum gracile, emarginatum.*

*Alæ sub-elongatæ, attenuatæ, remigibus 1<sup>má</sup> et 3<sup>tiá</sup> æqualibus, 2<sup>dá</sup> longissimá.*

*Cauda rotundata, vel cuneata.*

*Pedes breves, nudi; tarsi squamis anterioribus imbricatis, lateralibus parvis, reticulatis.*

*Bill* slender, notched. *Wings* rather elongated, pointed, the first and third quill equal, the second longest. *Tail* rounded, or cuneated. *Feet* short, naked; anterior scales of the tarsi imbricate; lateral scales very small, reticulate.

*Types.* *Col. speciosa?* Temm. 2. *Col. migratoria.* Linn.

Inhabits America.

---

## ORDER GRALLATORES.

*Family Ardeidæ.*

### TIGRISOMA.

*Rostrum validum; tomio serrato.*

*Alæ rotundatæ, remigibus 2<sup>dá</sup> et 6<sup>tá</sup> æqualibus, 3<sup>tiá</sup>, 4<sup>tá</sup>, et 5<sup>tá</sup> ferè æqualibus, longissimis.*

*Pedes mediocres; tarsi squamis reticulatis, unguibus brevibus, curvatis.*

*Bill* strong, the margins serrated. *Wings* rounded; the second and sixth quills equal, the third, fourth, and fifth nearly equal and longest. *Feet* moderate; scales of the tarsi reticulate, the nails short and curved.

*Type.* *Ardea tigrina.* Lath.

Two magnificent species, recently discovered in Mexico, have turned my attention to this group, which seems peculiar to the new world. Taking the Egrets as typical of the genus *Ardea*, we find in them the wings more powerful, and the tarsi more elevated, than those of the Tiger Bitterns. The first deviation I have observed from the typical *Ardeæ*, is in *Ardea virescens* and a few other kindred species, where the first quill is rather shorter than the second, the thighs feathered almost to the knees, the tarsi much shorter, the lateral scales reticulate, and the anterior transversely imbricate: the scapular feathers, although linear, are not unusually long. We are thus prepared to enter among the true Bitterns, of which our European species affords the type. In these birds the three first quills are nearly of equal length, but the tarsi are still shorter than in the last, the anterior scales large and transverse, the posterior small and reticulate; the nails also, are unusually long and very slightly curved. To this group, *Tigrisoma* bears a strong affinity, at the same time that it exhibits a construction very different from that of any of the foregoing forms. In the species before me, the sides of the head are not only much more denuded than in *Ardea*, but the chin is quite naked, a character which would seem to indicate an affinity with *Ciconia*. It should however be observed, that in other species from Brazil, the chin is feathered in the usual manner.

ART. XXXVI. *Monograph on the Cypræidæ, a Family of Testaceous Mollusca.* By JOHN EDWARD GRAY, Esq. F.G.S.

[Continued from Vol. i, p. 518.]

\*\*\*\* *Cypræa veræ.*

\*\*\* *Striatæ.*

92. *Cypræa subrostrata.* n. s.—Slightly-beaked Cowry.

Testâ ovatâ, globosâ, utrâque extremitate subrostratâ, atrobubenti; striis longitudinalibus confertis; lineâ dorsali latâ concavâ; basi convexâ submarginatâ; aperturâ lineari; dentibus subæqualibus.

*Inhabits* ——. Mus. nost.

Shell ovate globose, slightly beaked at each end, blackish red.

The longitudinal striæ are crowded, nearly smooth and equal: the dorsal groove is concave and rather broad, but the striæ are continued over it: the base is convex, and slightly margined on the outer side: the mouth is linear, much longer than the spire, which is completely hidden. The sides are more strongly ribbed than the back, and the teeth of both the lips are nearly similar.

Length  $\frac{3}{20}$ ; diameter  $\frac{1}{10}$  of an inch.

93. *Cypræa scabriuscula*. n. s.—Roughish Cowry.

Testâ ovatâ, ventricosâ, utrâque extremitate subrostratâ, niveâ; striis longitudinalibus confertis lævibus, interstitiis transversim minutè rugosis; lineâ dorsali angustâ, impressâ; basi planulatâ; aperturâ lineari; dentibus æqualibus.

$\beta$  minor. Testâ ovatâ, oblongâ, subrostratâ, triplo minore.

*Inhabits* Madagascar, Coast of Africa. Mus. nost.  $\beta$ —?  
Mus. nost.

Shell ovate, globular, slightly beaked at each end, snow white, longitudinally striated; the longitudinal striæ crowded, smoothish, equal, the spaces between the striæ beautifully marked with minute, transverse rugæ; the dorsal groove concave, narrow, and impressed; base flattish, scarcely margined; mouth linear, longer than the body of the shell. Teeth of both lips similar, minute, close together.

Length  $\frac{5}{10}$ , breadth  $\frac{3}{10}$  of an inch.

The small variety is similar in every respect, except that it is more ovate, and only  $\frac{1}{5}$  of an inch long, and  $\frac{1}{10}$  of an inch broad.

94. *Cypræa radians*.—Radiating Cowry.

Testâ ovatâ, suborbiculatâ, pallidâ, rubellâ; striis longitudinalibus convexis, distantibus, apice tuberculosis; lineâ dorsali impressâ, latissimâ, albâ; basi planulatâ, latè marginatâ; aperturâ lineari; dentibus inæqualibus, exterioribus minoribus.

*Cypræa radians*. Lamarck, *Ann. Mus.* xvi. 103. *Hist.* vii. 402.  
*Blainville*, *Dict. Sci. Nat.* xliii. 23.

*Cypræa Oniscus*. Dillwyn, *R.S.* i. 466. n. 61. excl. Syn.  
*Lamarck*.

*Cypræa*, n. 33. *Schroeter*, *Einl.* i. 142.

*Cypræa Pediculus*  $\beta$ . *Gmelin, Syst. Nat.* 3418. *Schreiber, Conch.* i. 76.

*Cypræa costata.* "Solander's MSS." *Dillwyn.*

*Testudo.* *Klein.*

Tortoise Cowry. *Humphreys.*

Icon. *Bonanni, Rec.* iii. f. 250. *Lister, Conch.* t. 706. f. 55.

*Martini*, 1, t. 29. f. 306. 307. 308? *Favanne*, t. 29. f. H. 3.

*Wood, Cat.* t. 17, f. 58.

*Inhabits* the Pacific Ocean. Western Coast of Mexico. *Lamarck.*  
Adriatic Seas? *Martini.*

Shell oval, ventricose, pale reddish brown, back darker; longitudinal striæ sharp, distant, distinct, some few of them ending before they reach the back, but most of them terminating in a white tubercle on the edge of the dorsal groove, which is very broad and white. Base rather flat, with both the edges considerably and sharply margined when full grown. The mouth linear, as long as the shell, and slightly curved towards the hidden spire. Teeth of the inner lip 12, outer 15; those of the outer lip often having one or two small teeth placed between some of the longitudinal striæ.

Length  $\frac{7}{8}$ , breadth  $\frac{3}{4}$  of an inch.

*Lamarck* refers to all the figures above quoted, except the last, for his *Cypræa Oniscus*, but his description agrees exactly with the full grown *Cypræa aperta* of Mr. Swainson, as he expressly says that it is known by its large mouth. Mr. *Dillwyn* has used the above quoted name of *Lamarck*, but has accurately described the shell intended above, which has also been equally well described by *Lamarck*, under the denomination of *Cypræa radians*, a name that Mr. *Dillwyn* has entirely omitted.

I have a worn specimen of a shell which certainly differs from this species. It has 11 teeth on the inner and 13 on the outer lip; the edge is thickened, rounded, and margined above; and the dorsal groove is much broader than in *C. sulcata*, but not so broad as in *C. radians*. It is of a pale reddish white, and as large as, and broader than, *C. sulcata*. It is perhaps a new species.

95. *Cypræa Californiana.* n. s. Californian Cowry.

Testâ ovatâ, ventricosâ, purpureo-fuscâ; striis longitudinalibus

convexis, distantibus, apice sub-incrassatis; lineâ dorsali latiusculâ, impressâ, albidâ; basi planulatâ, submarginatâ; aperturâ lineari; dentibus subæqualibus.

*Inhabits* California.

Shell ovate, ventricose, purplish brown; the longitudinal striæ are distant and convex; their ends are slightly thickened in the middle of the back, where there is a broad, whitish, impressed dorsal line. The base is rather flat, and slightly margined on the outer lip; the aperture is linear; the teeth of the inner lip 11, of the outer 16, nearly similar, small.

Length  $\frac{4}{10}$ , diameter  $\frac{3}{10}$ , of an inch.

This species is very like the preceding, but differs in always being of a darker colour, the dorsal line being narrower, and the ends of the longitudinal lines not being so distinctly thickened, nor the margin so much expanded. I was first shewn the shell by Mrs. Mawe, but I have since received several specimens from California.

96. *Cypræa Europæa*.—Europæan Cowry.

Testâ ovatâ, ventricosâ, fuscâ, trimaculatâ; striis longitudinalibus lævibus; lineâ dorsali nullâ; aperturâ lineari, posticé subproductâ; dentibus æqualibus.

*Cypræa Pediculus* (Europæa). *Linn. Syst. Nat.* 1180. *Penn. Brit. Zool.* iv. t. 115. *Dacosta, Brit. Conch.* 32. *Donovan, Brit. Shells.* ii. t. 43. *Montagu, Test. Brit.* 200. *Maton & Racket, Linnean Trans.* viii, 120. *Turton, Conchological Dictionary*, 35.

*Cypræa arctica*. “*Solander’s MSS.*” *Dillwyn.*

*Cypræa coccinella*. *Lamarck, Ann. Mus.* xvi. 104. *Hist. Anim. sans vert.* vii. 404.

*Cypræa Europæa*. *Montagu, Test. Brit.* iii. 88. *Dillwyn, R.S.* i. 467.

Icon. *Lister, Anim. Angl.* t. 3. f. 17.—*Lister, Conch.* t. 707. f. 57.—*Martini*, i. t. 29. f. 309.—*Penn. Brit. Zool.* iv. t. 70. f. 82.—*Dacosta, Brit. Conch.* t. ii. f. 6. republished in *Pulteney, Hist. Dorset.* t. 6.—*Donovan, Brit. Shells.* ii. t. 43.—*Turton, Conch. Dict.* f. 14. 15.—*Ency. Method. Vers.* t. 356. f. 1. b.

*ß immaculata.* Testâ immaculatâ albâ.

*Cypræa Pediculus* (Anglica). *Linn. Syst. Nat.* 1180.

*Cypræa arctica.* *Montagu, Test. Brit.* iii. 201.

1. Incompleta. Testâ tenui, politâ ; sublineatâ, spirâ præminulâ.

*Cypræa bullata.* *Montagu, Test. Brit.* iii. 202.

*Cypræa Europæa, Junior.* *Dillwyn, R.S.* i. 467.

Icon. *Montagu, Test. Brit.* t. 6. f. 1.

2. Junior. Testâ tenuissimâ, politâ, lævi ; labiis tenuibus.

*Inhabits the European Ocean.* Britain, *Lister, Montagu, &c.*

Shell ovate, ventricose, solid, brown, polished ; back with three spots, one at each end, and one on the right side of the centre ; the numerous longitudinal thread-like striæ are white, smooth, scarcely interrupted in the middle of the back, and not forming any impressed dorsal groove ; base rather convex ; mouth linear, a little longer than the concealed spire, and slightly curved towards it ; outer lip slightly thickened, rounded. Teeth of both lips nearly equal, those of the outer minute, and very close together.

Length  $\frac{5}{10}$ , breadth  $\frac{4}{10}$ , of an inch.

This shell may be at once distinguished from all the other species, by its wanting the dorsal groove, and being usually marked with three spots on the back, two of which are at each end, and one on the right side of the centre.

Col. Montagu, in his Supplement, has very properly united his *C. bullata* to this species, being satisfied that it was only the shell in its imperfect state, when it is smooth, pellucid, and according to its age more or less distinctly marked with pale white longitudinal stripes, commencing from the lips, and running more or less completely over the back ; these stripes are the rudiments of the longitudinal thread-like striæ.

When very young the shell is quite smooth, without any inflexed outer lip, and has a short distinct spire ; in this state it has been confounded by Dillwyn and other conchologists with the *Bulla diaphana* of Montagu, p. 225. t. 7. f. 8., which is the young of *Voluta lavis* of Donovan, t. 165, (the *Cypræa Voluta* of Montagu, *Testacea Brit.* p. 203. t. 6. f. 7.) and which forms, with a few other undescribed species, a section of the genus *Marginella* of Lamarck.

Col. Montagu observed that the animal differs in its young state as much from the adult, as the shells themselves in their young and adult states; for the mantle does not cover the shell when young, as it does when full grown. The mantle indeed is not perfectly formed and coloured when the shell is in the state called by him *C. bullata*.

Lamarck cites this species as being found fossil at Grignon, but DeFrance observes that he has never seen it there. There is a fossil specimen in the British Museum, which appears very nearly related to this species, but is nearly twice as large.

97. *Cypræa Pulex*.—Flea Cowry.

Testâ ovatâ, subventricosâ, fuscâ, immaculatâ; striis longitudinalibus lævibus; lineâ dorsali impressâ; aperturâ lineari, posticâ subproductâ; dentibus subæqualibus basique submarginatâ albis.

*Cypræa Pediculus*, var. D. *Dillwyn*, *R.S.* i. 467.

*Cypræa Pulex*. “*Solander’s MSS.*” *Dillw.*

*Cypræa Lathyrus?* “*Dufresne*,” *Blainv. Dict. Sci. Nat.* xliii. 25.

*Inhabits* the Mediterranean Sea, Sicily, Isle of France. *Dufresne?*

Shell ovate longer and less ventricose than *C. Europæa*; dull livid brown, with numerous fine, smooth, longitudinal, raised lines; dorsal line distinct, impressed; mouth produced a little beyond the hidden spire; base with its slightly-thickened edge pure white; teeth numerous, equal.

Length  $\frac{3}{10}$ , breadth  $\frac{2}{10}$  of an inch.

This species, which I have seen only from Sicily, is easily known by its small size, grooved back, and dull livid colour. It has a white base, and is of the same colour when worn.

98. *Cypræa 4-punctata*.—Four-dotted Cowry.

Testâ ovatâ, ventricosâ, roseâ, punctis quatuor fuscis notatâ; striis longitudinalibus confertis, lævibus; lineâ dorsali angustâ, impressâ; basi convexâ; aperturâ lineari arcuatâ; dentibus æqualibus.

Incompleta. Testâ lævissimâ, roseâ, diaphanâ; spirâ distinctâ.  $\beta$  *immaculata*. Testâ roseâ immaculatâ.

*Inhabits* ————— *Mus. Brit.*, *nost.*

Shell ovate, ventricose, rose-coloured, with 4 small brown dots,



one of which is at each end of the dorsal line, and one on each side, the front one being on the right side, and the hinder on that next the spire, or the left; the longitudinal striæ are narrow, smooth, and very close together; the dorsal line is deep and narrow; the base is convex; the mouth is linear, curved at both ends, as long as the shell and the covered rather convex spire; the outer lip is thickened on the outside, and margined; the teeth are very small, and close together.

Length  $\frac{3}{10}$ , breadth  $\frac{2}{10}$  of an inch.

This shell is very rarely destitute of the four small dorsal spots. When young it is of a most beautiful purplish rose colour, quite smooth, and polished, with a few very obscure concentric wrinkles.

I have seen this shell called in some cabinets *C. Pulex* of Solander's MSS.; but the description given by Dillwyn of that species does not agree with it in any respect: it answers very well for the species found in the Mediterranean Sea.

This shell may perhaps be *C. pediculus*  $\beta$ . Born, *Mus. Vind.* 193. "Testâ incarnatâ maculis minutis rubris sulco dorsali nullo." It has however a distinct dorsal line.

### 99. *Cypræa Oryza*.—Rice Cowry.

Testâ ovato-globosâ, niveâ; striis longitudinalibus confertissimis, distinctis, acutis, lævibus; lineâ dorsali angustâ, impressâ; basi convexâ; aperturâ lineari, arcuatâ; dentibus æqualibus.

*Cypræa sulcata*. Var.  $\beta$ . *Dillwyn, R.S.* i. 466.

*Cypræa nivea*. "Solander's MSS." *Dillw.* "Leathes MSS." *Sowerby*.

*Cypræa Oryza*. *Lamarck, Ann. Mus.* xvi. 104. *Hist.* vii. 403.

Le Biton. *Adanson, Senegal*.

Icon. *Rumph. Mus.* t. 39. f. P. copied in *Petiver, Amb.* t. 16.

f. 22. *Gualter*, t. 14. f. O.P. *Adanson, Senegal.* t. 5. f. 3.

Inhabits the Asiatic Ocean. Timor, *Lamarck*. Senegal, *Adanson*.

Shell ovate, globose, snow-white, rather pellucid; the longitudinal striæ are very numerous, close together, and acute; they often end abruptly, or unite to another before they reach the dorsal line, which is very deep and narrow; the base is very

convex, and the margin of the outer lip slightly and abruptly thickened; the mouth is narrow, linear, curved at each end, and rather longer than the body of the shell, extending a little beyond the concealed spire; the teeth are small, close together, and equal.

Length  $\frac{1}{2}$ , breadth  $\frac{3}{8}$  of an inch.

This shell is easily distinguished by its pure white colour and globular form.

100. *Cypræa Pediculus*.—Louse Cowry.

Testâ ovatâ, ventricosâ, albido-rubellâ, punctis sex fuscis maculatâ; striis longitudinalibus, confertis, subgranosis; lineâ dorsali angustâ, impressâ; basi carnescente, planiusculâ; aperturâ lineari, posticâ subproductâ; dentibus æqualibus.

*Cypræa Pediculus* (Indica). *Linn. Syst. Nat.* 1180. *Schroeter, Einl.* i. 129. *Gmelin*, 3418. *Schreiber, Conch.* i. 76. *Payraudeau, Cat.* 171.

*Cypræa Pediculus*. Var.  $\alpha$ . *Born, Mus.* 193.

*Cypræa Pediculus*. *Lamarck, Ann. Mus.* xvi. 103. *Hist.* vii. 403. *Blainville, Dict. Sc. Nat.* xliii. 24.

*Cypræa sulcata*. *Dillwyn, R.S.* i. 466.

Icon. *Lister, Conch.* t. 706. f. 56. *Gualt. Test.* t. 15. f. P. *Argenville, Conch.* t. 18. f. L. *Zoomorph.* t. 3. f. I. K. *Favanne*, t. 29. f. H. 1. *Knorr, Vergn.* vi. t. 17. f. 6. *Martini, Conch.* i. t. 29. f. 310. 311. *Eney. Method.* t. 356. f. 1. a.

1. Incompieta. Testâ lævigatâ, sublineatâ.

2. Junior. Testâ lævissimâ, politâ.

$\beta$ . *suffusa*. Maculis dorsalibus suffusis, confluentibus.

*Inhabits* the West Indian Ocean. Jamaica, Barbadoes, *Lister*. Mediterranean? *Blainville*. Corsica, rare, *Payraudeau*.

Shell ovate, ventricose, reddish-white, with six irregular squarish brown spots, three of which are on each side of the dorsal line; the central pair are the largest; the longitudinal striæ are close together, and slightly beaded, especially near the dorsal groove, where they end abruptly; the dorsal line is narrow and deep; the base is flattish, shelving inwards on both sides; the sides are slightly margined, and flesh-coloured; the aperture is linear, as

long as the shell, and slightly curved towards the hidden spire; the teeth of both the lips are nearly similar, rather large, and distinct; columella front deep, slightly concave, rib-striated.

Length  $\frac{5}{10}$ , diameter  $\frac{4}{10}$  of an inch.

When young the shell is thin, transparent, and polished; the lip gradually becomes incurved, and the surface has, before the outer coat is deposited, a quantity of opaque white longitudinal lines, on which the ribs are placed.

I have been informed, on very good authority, that this shell has been found on the Southern coast of Britain; but I have not had an opportunity of seeing the specimens. Payraudeau places it in his list of Corsican shells, but he refers only to figures of *C. Europæa*, although he distinctly describes the dorsal groove; and Blainville suspects that it is found in the Mediterranean Sea.

The variety is smaller and less ventricose; the ribs are rugose and end in a slight bead near the dorsal line, which is narrow and deep. The back of the shell is mottled with reddish-brown dots, which in some specimens are more crowded, where the spots are placed in the other variety. It may probably prove a species.

Lamarck and DeFrance observe, that they have found at Turin and Angers, a fossil shell which exactly agrees with this in form and size.

[To be concluded in our next.]

ART. XXXVII. *Observations on the Fishes contained in the Collection of the Zoological Society.* By E. T. BENNETT, Esq., F.L.S., &c.

HAVING recently been engaged, in conjunction with Mr. Vigors, in an examination of the Fishes contained in the collection of the Zoological Society, we discovered among them many species which have remained hitherto unnoticed by writers on Ichthyology. The more interesting of these I propose to describe in the successive numbers of the Zoological Journal. On the present occasion my attention will be directed to two new species of the

genus *Antennarius* of Commerson's manuscripts, (a group separated from the *Lophius*, L., chiefly on account of the body being compressed laterally, instead of being depressed from above downwards,) and to a single species of the genus *Perca*, La Cep.

Before, however, I proceed to the descriptions, I may be allowed to offer a few observations on the position assigned by M. Cuvier to the Linnean group, of which the former genus forms a part. In his "Règne Animal distribué d'après son Organisation," he has placed these Cartilaginous Fishes among his *Poissons Osseux*; these Fishes, which have no external *opercula*, and merely a simple opening leading to the *branchiæ*, at the termination of the second section of his *Perches*, a family especially remarkable for the great development of the *opercula*. To the *opercula* of the *Perches* the *vis formatrix*, to use an old expression, appears to have been directed with its utmost energy; not only are they dentate and spinous at their edges, frequently to a very considerable degree, but in several of the genera they are even made horrible by the strong processes and projections which occupy the whole of their surface. A more incongruous situation could scarcely have been selected for fishes, in which these appendages to the respiratory organs are entirely concealed, and in which the very opening that leads to them cannot be detected without difficulty.

In thus placing them, M. Cuvier was probably misled by the resemblance borne by the typical *Lophii* to the *Batrachi*, Schn. Their position in his system next to this latter genus, to which in outward form they approach very nearly, appears to authorise this supposition. If this was indeed his inducement, he also has fallen into the very common error of mistaking a relation of analogy for one of affinity. It is at least more probable that affinity should be indicated by the consistence of the skeleton, and especially by the respiratory organs, than by the mere depression and lateral expansion of the head.

At a subsequent period M. Cuvier seems himself to have been dissatisfied with the situation he had previously assigned to the *Lophii*, for, in a Monograph of the *Chironectes*, or *Antennarii*, published in the third volume of the "Memoires du Muséum,"

he arranges them with his family *Gobioides*. This new position appears to be equally untenable with the former: it is open to the same objections, though that derived from the development of the *opercula* may apply to it with somewhat lessened force. Yet here also they are associated with fishes possessing a bony skeleton and well defined *opercula*.

It cannot fail to be remarked, that M. Cuvier stands alone in both these views of the natural affinities of *Lophius*. All previous systematists, without, I believe, a single exception, have concurred in placing this genus near *Balistes*, L. Artedi, Linné, Klein, Gouan, La Cepède, and Duméril, disagreeing continually on other points, accord perfectly on this. The consistence of the skeleton, and the structure of the respiratory organs, are similar in both; they differ only in the teeth and in the ventral fins. The latter, in all the species of *Balistes* yet known, except one, are either abortive, or soldered together so as to form a kind of keel. In one of the species of *Antennarius* which I am about to describe, the external appearance induces the belief that there exists a corresponding union of the supports of the ventral fins, though the fins themselves are distinct. An additional proof is thus afforded of the affinity recognised of old. Another may be pointed out in the striking manner in which the united processes of the head in the *Lophies hérissée* and *lisse* of M. La Cepède resemble the anterior dorsal fin of the various species of *Balistes*, Cuv. This fact, like the former, has only recently been made known to science, and cannot consequently have influenced the opinions of any of the systematic writers above noticed; but, like the former, it furnishes a corroboration of the correctness with which the affinity had been ascertained. Their views were not founded on the consideration of these secondary particulars, but by them they are strongly confirmed.

Classis. PISCES.

Ordo. BRANCHIOSTEGI, Artedi.

Genus. ANTENNARIUS, Comm., M.SS.

LOPHIUS, (pars,) L.

LOPHIUS, Duméril.

CHIRONECTES, Cuv.

1. UNICORNIS. *Ant. scaber : supernè pallidé fuscus, maculis irregularibus strigisque anastomosantibus nigro-fuscis ; infernè albus, fusco reticulatus : capite albo, rufo marmorato : radio capitali primo tenuissimo, secundo brevi, cylindrico.*

D. 12. P. 11. V. 5. A. 7. C. 9.

Tab. ix. f. 1.

The body is compressed, somewhat carinate above, and inflated beneath. Its surface is scabrous. The prevailing colour of the upper parts is pale fuscous, extensively and irregularly mottled with blotches and lines of a dark fuscous hue, inclining to black, intermingled with a few white spots. The under side is white, irregularly reticulated with fuscous lines, which occasionally form blotches at their points of union. The fins are coloured and marked in a similar manner with the parts of the body to which they adjoin ; the caudal one being white at the base and fuscous at the *apex*, with occasionally a white sub-apical spot. The head is white, variegated, especially upon its sides, with large rufous or flesh-coloured patches, which become sordid on its hinder parts, and on the beginning of the back. The under jaw corresponds in colour with the head : the throat is white, with pale fuscous spots gradually becoming darker as they approach the *abdomen* ; its sides are marked with fuscous, nearly vertical, lines, which rarely anastomose with each other.

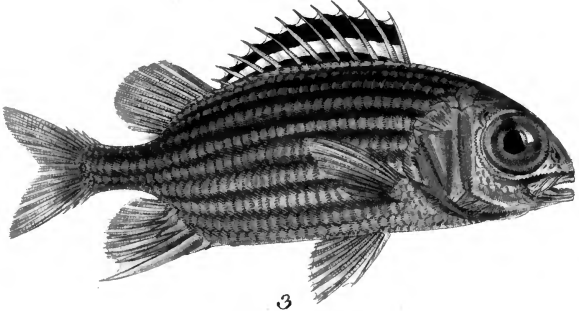
The mouth is protected by thin lips, which are destitute of *cirrhi*. On the nose is a long setaceous filament, which is terminated abruptly ; and immediately behind this is a short, scabrous, horn, about one-half the length of the filament, which is articulated at its base to the *cranium*, and is capable of elevation or depression. The *vertex* is slightly prominent, and probably becomes gibbous at certain periods : to the touch it appears as though there existed here beneath the skin a bony process, resembling the nasal horn, but entirely imbedded within the integuments.

The dorsal fin projects but slightly, appearing rather like a continuation of the back, and sloping suddenly down at its caudal extremity. The other fins are rounded. The extremities of the





2



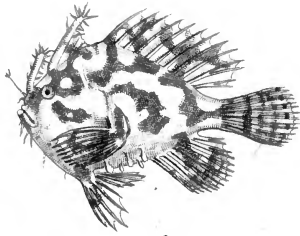
3



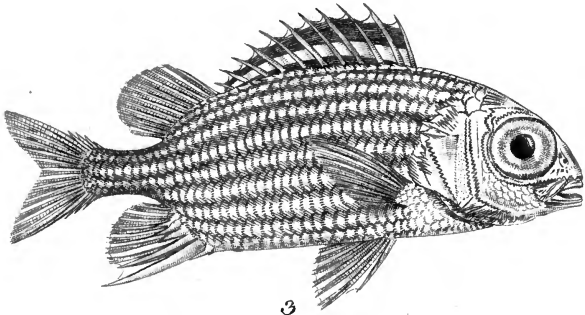
1

1. Unicornis . p. 374.
2. thians . p. 375
3. Perca pulchella . p. 377.

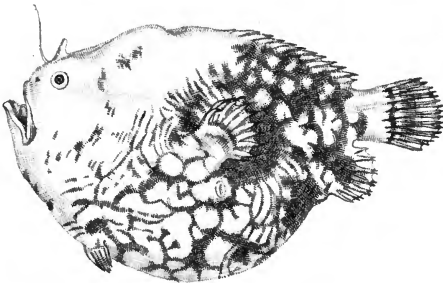




2



3



1



rays are all free, though scarcely rigid; except those of the dorsal fin, they are bordered with membrane almost to their tips.

Length  $2\frac{1}{2}$  in. Breadth  $1\frac{1}{4}$ . Length of the horn  $1\frac{1}{2}$  lin.

Described from two specimens preserved in spirit, in the collection of the Zoological Society, to which they were presented by R. Barclay, Esq. They came from Madagascar.

The long, setaceous, simple filament, and the short nasal horn, at once distinguish this from all the other species except the *Chironectes tuberosus*, Cuv. From this it differs sufficiently in colour, the latter being described as pale fulvous, marbled with griseous, and its dorsal fin being fulvous and unspotted. It is probable also, that the second ray, or nasal horn, is more free in the *Ant. unicornis* than in the *Ch. tuberosus*, that of the latter being stated to be "assez degagé."

2. NITIDUS. *Ant. laevis: albidus, vittis irregularibus lobatis maculisque ferrugineis, punctisque albis: radiorum capitalium primo brevi, penicilligero, secundo et tertio cirrhosis.*

D. 13. P. 10. V. 5. A. 7. C. 7.

Tab. ix. f. 2.

The body is strongly compressed, and its surface is perfectly smooth. The prevailing colour is whitish, marked with irregular brownish-ferruginous *vittæ*, of which the upper commences behind the *vertex*, and is continued along the back to the centre of the caudal fin: its margins are lobed, and the superior one is usually branched, giving off *fasciæ* of the same colour, which traverse the dorsal fin. At its commencement it is frequently united to a second, equally irregularly margined, *vitta*, which passes downwards towards the centre of the anal fin, becoming interrupted towards its termination. A third *vitta*, somewhat less lobed, extends from immediately below the eye to the centre of, and along, the pectoral fin. On the head the ferruginous spots are elongated and run together, so as to form an irregular reticulation. A few ferruginous spots occur, independent of the *vittæ*, especially on the fins, where they are paler. There also occur, particularly on the lower parts of the body, white points and

specks, approaching to niveous, of various sizes, and in some individuals very numerous.

The lips are furnished with *cirrho*, which are frequently branched at their extremities. On the upper lip these are chiefly confined to the centre, immediately above which, at the base of the anterior process of the head, is a longer filament, bearing at its tip a rather large tuft, formed of the extremely numerous and minute subdivisions of its terminal club. The *cirrho* of the lower lip extend round the whole of its margin. Similar *cirrho* are continued from the angles of the mouth along the projection formed by the edge of the lower jaw, and others extend from its centre along its middle line towards the ventral fins. Behind these again, the edges of the *abdomen* are similarly fringed as far as the anal fin.

On the head are two processes. The first bears at its base the nasal filament, which it exceeds in length: it is articulated at its base to the subjacent bone, and is unconfined by membrane: it is furnished, especially on its sides, and towards its tip, with numerous short, floccose, *cirrho*. Behind this, almost on the *vertex*, is the second process: it is longer than the preceding one, which it resembles in its articulation, in its *cirrho*, and in their situation, but is affixed behind to the *vertex* by a membranous expansion of the skin, which extends throughout its whole length.

The whole of the fins project considerably from the body. The supports of the pectoral ones are very long, resembling arms: those of the ventral appear as though united into a single one, bearing a strong resemblance to the keel-like process, or single ventral fin, of the species of *Balistes*, L. The caudal fin is rounded.

Length  $1\frac{1}{2}$  in. Breadth  $\frac{1}{2}$  in.

Described from four specimens preserved in spirit, in the collection of the Zoological Society. There is no locality attached to these. They were purchased in 1823, by Mr. Vigors, at a sale in Piccadilly, of subjects in Natural History, the greater number of which were from the Cape of Good Hope. The specimens before us may be from the same country, but there is no certainty on the subject.

I feel some hesitation in describing this species as distinct from the *Chironectes lævigatus*, Cuv., with which it accords in general smoothness, in the form and position of the appendages of the head, and in the arrangement of the *cirrho*. The colours are moreover the same, but their disposition in the *Ant. nitidus* is so comparatively regular, and extends so much more over the body, that I have been induced to characterize it. In a specimen of the *Ant. lævigatus*, in the collection of the Zoological Society, the only approach to the vittiform appearance is in the ferruginous line which passes along the back; below this, the deeper colour is irregularly disposed, and exhibits a tendency to run together: the continued series passing into the anal and pectoral fins, are by no means to be traced. The examination of a greater number of individuals might possibly lead to the discovery of intermediate stages, but that which is figured is at least a strongly marked variety.

M. Cuvier states that his species is identical with the *Lophie unie* of M. Bosc, a fact which he has ascertained by its comparison with an original specimen presented by that author to the Museum d'Histoire Naturelle. Without so convincing a proof it would have been impossible to conceive that a naturalist so eminent as M. Bosc, could have been guilty of the many palpable errors in description, that are to be met with in his account of his species. He describes it as wanting the nasal filament and the *cirrho*, and states that the processes of the head are glabrous: in all these points he is contradicted by his own specimen. For the only excuse which can be advanced in his behalf he is indebted to M. Cuvier, who suspects that he was prevented from examining it accurately by the smallness of the individual, which did not exceed half an inch in length.

Genus. PERCA. La Cepède.

PERCA, (pars). L.

PULCHELLA. *P. lineis longitudinalibus argenteo-cærulescentibus: pinnarum dorsalium secunda radiis 13.*

D. 11, 13. P. 15. V.  $\frac{1}{7}$ . A  $\frac{3}{8}$ . C. 19.

Tab. IX. f. 3.

Inhabits Sumatra.

The prevailing colour is fuscous, becoming in certain lights iridescent with golden and pale blue, and marked on each side by seven or eight silvery lines, which are also iridescent with blue. The scales of the cheeks and the margins of the *opercula* are cœrulescent. The membrane of the anterior dorsal fin is dark fuscous, with a much paler and almost white *vitta* along its middle. The caudal fin is forked.

The *opercula* are strongly serrated, and are furnished with a spine at their upper part. The *præ-opercula* are finely serrated along their edges, and have a strong spine at their inferior angles. A fine serration extends round the orbit, and each of the scales by which the body is covered is also finely serrated round its posterior edge.

Length 3 inches; breadth 1 inch.

Described from two specimens preserved in spirit in the Museum of the Zoological Society. They form part of the extensive and noble collection formed in Sumatra by the late President, Sir T. Stamford Raffles, and presented by him, with his characteristic liberality, to the body which gratefully acknowledges him as its founder.

The discrimination of the *Perca pulchella* from the congenerous species with which I am acquainted is obvious from its specific character. The longitudinal direction of the marking is by no means common in the genus, in which the colours are usually disposed in *fasciæ*.

From the information of Lady Raffles it appears that the colours of the living fish are peculiarly beautiful. The elegance of its delicate blue, mingled with the varying tints of gold, and relieved by the silvery lines, causes it to be sought after, in its native country, as an ornament of the boudoir or of the conservatory; where it is kept in globes, in a manner similar to that in which Gold-fishes are preserved in Europe.

ART. XXXVIII. *An account of Elater Noctilucus, the Fire-fly of the West Indies.* By JOHN CURTIS, Esq. F.L.S., &c.

By the zeal and enterprize of our countrymen, no nation perhaps ever enjoyed greater advantages than our own in the possession of valuable materials in Natural History, whether we regard their variety or the distant sources from whence they have been drawn; and in no branch of science have these advantages been more manifest than in Entomology. This department admits of more easy and perfect investigation than many others, from its objects generally retaining their form and colour after death; although there are some whose beauty fades, and others whose natural figure is impaired, by the extinction of life. It is therefore a fortunate circumstance when naturalists have an opportunity of seeing in a living state those objects whose characters are evanescent, as they are thereby enabled to avoid error and misrepresentations.

The following attempt to elucidate the history and œconomy of an Insect that has long been celebrated abroad for its striking qualities, and which seldom fails to attract the attention of Europeans, will not, I trust, prove unacceptable. For the opportunity of making the following remarks I must express my obligations to my friend John Campbell Lees, Esq., F.H.S., to whose kindness I am indebted for living specimens of the Insect, as well as for the most valuable of my observations.

Order. COLEOPTERA.

Family. ELATERIDES, Latr. ELATERIDÆ, Leach.

Genus. ELATER, Linnæus, &c.

NOCTILUCUS. *E. thoracis lateribus maculâ flavâ glabrâ.* Linn., Syst. Nat., v. 2, p. 651, n. 4. De Geer, Ins. v. 4, p. 160, 2. Tab. 18, f. 1. Oliv., Ent. v. 2. gen. 31, p. 15, n. 13. Tab. 2, f. 14 a.

Length from 13 to 17 lines.

Desc. Dull castaneous, thickly and minutely punctuated, and

covered with a brownish ochreous pubescence. *Antennæ* shorter than the thorax, with the fourth and following joints serrated; the terminal one mucronated, giving it the appearance of a twelfth joint. *Head* piceous, concave between the eyes, which are very smooth and shining. *Thorax* quadrate, piceous, anterior angles rounded, posterior acuminate; two *foveæ* towards the centre, and a convex, horny, transparent, spot on each side near the posterior angles; straw-coloured when alive, and emitting light; becoming dull after death. *Coleoptra* elliptic, attenuated. *Scutellum* ovate. *Elytra* with nine punctured *striæ* on each. *Wings* ample. *Legs* rather short.

The luminous *Elaters*, of which there are sixteen species enumerated by Schönherr; appear to be confined to the New World, and the greater portion of them to Brazil.\*

Mr. Lees having been struck with the beauty of the Fire-fly on his arrival in the West Indies, and becoming desirous to keep them alive, made several attempts during his residence at the Bahamas; but was unable to succeed in his object, until he learned from a Lady, that the cage containing the Insects should be daily immersed in cold water. This is rendered necessary from their natural habitation being in swampy meadows, where during the day they probably lie concealed in the wet herbage. Perhaps the introduction of damp moss into the cage, (which ought to be made of wood and not glued together,) might be more natural and salutary to the Insects. The *Elaters* feed upon the sugar-cane, and should the larvæ do so likewise, which is more than probable from their being Xylophagous, they must do incredible mischief to the Planter, as they are produced in abundance in the West Indian Islands, and are very generally distributed over them. Mr. Lees having taken some sugar-cane to sea with him to feed the Beetles upon, he observed that they readily broke the

\* Mr. G. Charlwood, F.L.S., informs me, that having been cast away whilst lying off Egg Harbour, New Jersey, and being compelled to remain out all night, he saw the Fire-fly, (which he is confident was an *Elater*, and he thinks our species,) flying about from 11 o'clock at night to sun-rise, giving a beautiful light; and I was surprised to learn that he had seen them at another time so far north as Boston.



wood away with their mandibles, to obtain the saccharine matter on which they fed; and after his stock was consumed, he gave them brown sugar, by which means they were kept alive the whole of their voyage, from June to the middle of September.

*Elater noctilucus*, like the rest of the genus, (of which we have in this country between fifty and sixty species,) is enabled by the thoracic process to gain its feet by a spring when laid on its back; but it has not the muscular power that many of the smaller ones have, and is therefore not able to leap more than three or four times its own length. The brilliant light, which emanates from a convex spot on each side of the thorax, shines forth or is extinguished at the will of the animal. The power of the light, when excited by the breath or by friction, was so great, that carrying it along the lines of a book I could distinctly read them, and applying it to my watch, I could without difficulty ascertain the hour.

The insect when roused and in perfect vigour seems to be completely saturated with this luminous secretion, since the back, when the elytra and wings are expanded, has a phosphoric appearance, and there is a strong light at the base of the abdomen where the posterior coxæ are attached, which being apparent only in some, I thought might be peculiar to one sex, but its absence was more probably caused by the languid state of the animal. The light is far more beautiful in colour, and greater in power, than the mild secretion of the Glow-worm, (*Lampyrus noctiluca*), and the substance, if removed from the beetle immediately after death, will remain luminous, like phosphorus, on the object upon which it is placed.

I have to regret that these Insects arrived at a period when the meetings of the Linnean Society were suspended, and very few Naturalists were in town who could partake of the tropical treat which the exertions and kindness of Mr. Lees had prepared for them; for the weather becoming suddenly cold they soon shewed symptoms of languor, and died in a few days.

It is to be hoped that others will be induced to bring these Insects over alive earlier in the season; for there can be little doubt that they would live through a warm summer in this climate.

I do not despair therefore of seeing our fair country-women at home, as well as abroad, employing these living Gems to add to the splendour of their attire. At the Havannah they are collected and sold for ornamenting the Ladies' head dresses at evening parties, when they are, I understand, generally confined under gauze which covers the head, and from amongst the ringlets of hair these terrestrial stars shine forth with all their beauty.

---

ART. XXXIX. *Some account of the Life and Writings, and Contributions to Science, of the late SIR THOMAS STAMFORD RAFFLES, Knt., F.R.S., S.A. & L.S., &c.; successively Lieutenant-Governor of Java and its dependencies, and of Fort Marlborough, Singapore, and the British Possessions in Sumatra: FOUNDER AND PRESIDENT OF THE ZOOLOGICAL SOCIETY.*

*By E. W. BRAYLEY, JUN., A.L.S., & M. ZOOL. Soc.*

---

[Continued from p. 48.]

THE official transactions of the subject of this memoir, in every situation he filled, were such as may be contemplated with much pleasure, even by those persons who do not take any particular interest in the concerns of civil or political government, and whose attention is principally directed to a more elevated range of subjects connected with intellectual pursuits, and the progressive mental improvement of the human race. This peculiarity arises from the marked sagacity, the benevolent regard to the best interests of mankind, the grandeur of conception and the acuteness of discernment, which these transactions display, and the corresponding tone of mind they induce upon the reader. They claim in the highest degree the attention of that class of the British public, the members of which regard, with an anxious and a vigilant eye, the mighty revolution now undergoing by all human

affairs, especially those immediately connected with the free and unchecked pursuit of knowledge; and who take an active part in effecting or advocating the changes and improvements, which this revolution demands, and will inevitably create. To place the lives and liberties of the people he governed in that security, and to surround them with those comforts, which every individual of the human species has a right to enjoy; and after having thus prepared the ground for moral amelioration, to communicate to them freely every species of knowledge, in order that their minds, enlightened to discern their own real character, might be induced to reject whatever they saw to be of baneful tendency, and to cherish or adopt whatever might lead to virtue and true happiness;—such were the objects,—all pursued with due regard to the interests of his country and his more immediate employers, which Governor Raffles designed to accomplish, in all his measures of internal polity. And his measures of foreign intercourse embraced every disposition of affairs necessary for the protection and support of the principles and line of conduct he thus pursued in his home-administration. He adopted, above all, as a guiding principle of government, that of regarding every colony as an integral though distant province of the mother-country; and consequently of admitting the native inhabitants, as well as the colonists, to all the privileges enjoyed by the people of the mother-country; so far as might be consistent with their difference in situation and character.

In agreement with these general views, and in conformity with the wise and benevolent designs of his revered patron the Earl of Minto, the leading features of Mr. Raffles's administration in Java, were the thorough and complete reform of the abuses permitted and even sanctioned by the former Dutch government, and the gradual but effectual improvement of the varied and extensive population subject to his authority. Having in his earlier appointments and residence in the Malayan countries, as already mentioned, become acquainted with the peculiarities of the Malayan character, and the elevation of which it appeared susceptible, he aimed at no inferior an achievement, on assuming the government of this island, than the complete reformation of the Malays,

as subjects of European authority ; by the abrogation of some of the worst principles and practices that could deform society, and the introduction of means of moral and intellectual advancement, before unknown, or if known long neglected, in this interesting part of the world.

The principal transactions of the British government in Java, under Mr. Raffles, which we shall proceed briefly to review, as the direct results of his energy and talents for his station, are the following : the total change effected in the revenue concerns of the colony, with the scientific survey of the island and statistical examination of its resources, subservient to that change ; the promulgation of a code of judicial regulations founded on the principles of the British constitution, but adapted to the state of society and the peculiar native institutions in Java ; the measures taken with the view of securing for Great Britain a paramount influence in the Eastern seas ; and the means adopted in order to obtain a direct commercial intercourse between the British colonies and the Empire of Japan, as a preliminary provision for the transfer of the Tea-trade to that country, in the possible and by some anticipated event of our exclusion from the ports of China. With the sketch of these measures, will be interwoven an account of the patronage afforded to the scientific investigation of the island, and the means taken to promote it, in addition to those already adverted to in the history of the Batavian Society, with respect as well to its physical structure and natural productions, as to its antiquities and ancient history ; and a review of the contributions to knowledge thus effected by Mr. Raffles or his agents and friends.

The political and civil measures above alluded to were remarkably successful, so far as the Supreme Government of India allowed them to be pursued. The utmost energy and decision of character, however, were called for in effecting them, on account of the strenuous and persevering opposition they received, for the space of two years, apparently through a total difference of political views, from the late Major-General Sir R. Rollo Gillespie,—an officer of high military character, who was associated with Mr. Raffles in the government, during that period, as Commander-in-Chief,—and also from two other members of the Council. That

some of Mr. R.'s exertions should have been thus opposed, during their progress, by his immediate coadjutors, and that others should have been considered as of doubtful policy by his superiors, will not occasion surprise in the minds of those who possess any knowledge of human nature and the concerns of public life. To such, on the contrary, it will prove matter of admiration, that so young a man, exposed, on account of his very youth alone, to an unusual share of jealous competition, should have planned and executed measures in general so unexceptionable and so successful, whilst at the head of an administration necessarily invested with extensive powers and wide discretion, for the regulation of a colony, the affairs of which had been for many years in a very deranged condition, and which was surrounded by native governments of depraved character. All these measures, too, it must be observed, were such as reflected honour on the character of Mr. Raffles, as a man and a public officer, if even it be true that some of them were defective in policy, as indifferently adapted to the existing state of affairs in our Indian government, and the ostensible views of the East-India Company.

On becoming Lieutenant-Governor of Java, Mr. Raffles quickly discerned that an entire renovation of the economy of the former government would be necessary, to form a basis for his ulterior designs.

The principal source of revenue in the colonies of the Eastern Archipelago, whilst subject to the Dutch, prior to the capture of Java, in 1811, was the monopoly by the government of the grain and other produce of the land; which the cultivators were required to deliver, at an arbitrary and always inadequate rate, and which was afterwards dealt out to the consumers, at a far higher rate. The whole body of the people, therefore, depended upon the government for their very subsistence. The principle of encouraging industry in the cultivation and general improvement of the country, by creating an interest in the effort and the fruits of that industry, was wholly unknown. The manner in which this revenue in kind should be collected, was left to the discretion of the Regent, or chief native authority in each district; the cultivators having no security against oppressive requirements, be-

yond the claims of custom and usage ; and though it was prescribed by custom, that a certain portion only of each crop should be rendered-up, no positive means existed with the cultivators, of preventing a greater levy. The power and the interest of authority was successfully exerted to stifle all complaints ; whilst the peasantry, though suffering the greatest injustice, despairing of relief, would endure almost every privation, rather than quit the land that had been tilled by their forefathers, to which they were attached by the strongest ties of habit, of social affection, and of religious veneration.

Feudal service in its most unmitigated and desolating form, was another of the grievances and oppressions under which the natives of this ill-fated country groaned. No means were provided for obtaining a direct controul over the demands for labour, which were consequently unlimited. The public officers of the Dutch government universally required the services of the people without regular hire : the native chiefs subordinate to them, pursued the same system ; no check upon this system existed ; and thus the energies of the people were crushed, and their labour frittered away, becoming productive neither to themselves nor to the state. They were reduced, in fact, to the lowest degree of vassalage and subjection.

The gradual defalcation of revenue was the inevitable consequence of this complicated state of disorder ; whilst additional pressure was occasioned by the failure of external commerce, during the decline of the Dutch East-India Company. The government, forced to look within itself for relief, discovered its embarassments to be daily augmenting ; and as the practice of measures inherently dishonest, though under a legal and regulated form, imperceptibly familiarizes the mind with the idea of invading the rights and property of others in a more palpable shape, so the funds of public societies were now appropriated to the government-treasury, and the next step, of course, was to obtain the private property of individuals, for the same purpose, by forced loans. An arbitrary increase of paper-currency was issued, to provide for the daily expenses of the state, and this proving inadequate to defray them, the government was compelled to deliver a propor-

tion of colonial produce, in payment to the officers of its various establishments; or, to use the forcible terms of Sir Stamford Raffles, "to pawn the produce in store to satisfy the current demands upon the public treasury." \*

Such was the financial condition of this colony, when Mr. Raffles succeeded to its government.

The important political arrangements, however, he made with the native princes, and the confidence that was early reposed in the British Government, enabled him to effect the introduction of an important system of internal management, and the establishment of a land-rental on fixed principles. A complete reform of the vicious mode of collecting revenue already briefly described, and a fundamental change in the entire system of landed property and tenure, had been enjoined by the Earl of Minto, previously to his departure from the island. And no time was lost by the Governor, in instituting the local inquiries and obtaining the detailed information, without which the safety as well as the success of the measure would have been problematical. Its justice and its practicability were accordingly made the objects of consideration, in a commission appointed for the purpose, under the guidance of Lieut. Colonel C. Mackenzie, of the Madras Establishment, afterwards Surveyor-General of India. By this commission and its agents statistical inquiries were instituted in every district, and the most detailed information collected respecting every department of affairs relating to the subject; embracing the existing state of the country, its population and resources, and the conduct of the European and native administrations. A general survey was made of nearly the whole island, and detailed surveys were also made of the lands attached to each village and cultivator; a scientific map of Java being for the first time constructed, and a body of statistics, probably more complete than we possess regarding any other part of India, collected and arranged, as well for the present use of the government as for historical reference in future. After the mature inquiry thus effected, and the extensive series of data thus obtained, no obstacle appeared to exist, either

\* "Statement of the services of Sir Stamford Raffles: London, 1824." p. 9-11.

in the laws or the usages of the country, to the interference of government, in regulating the condition of the Javan peasantry ; and Mr. Raffles resolved, therefore, that it should take into its own hands the management of that share of the land-produce which was allowed to be its due, and protect the cultivator in the enjoyment and free disposal of the remainder. The undue power of the chiefs was to be removed, and, so far as they had a claim for support, founded either on former services, or on the deprivation of expected employment, they were to be remunerated in a different manner. The lands, after being surveyed and their crops estimated, were to be parcelled-out among the inhabitants of the villages, in the proportions established by custom or recommended by expediency. Contracts were to be entered into with each individual cultivator, who was to become the tenant of government ; and leases, specifying the extent and the situation of their land, together with the conditions of their tenure, were to be granted for one year, or for two or three years, with a view to permanence, if the arrangement should be found, at the end of the stipulated term, to combine the interest of the public revenue with the welfare and increasing prosperity of the occupant. Room was thus left for a new adjustment, a reduction of rate, or any other change in the system which the result of the provisional arrangement might render necessary, in order to adapt the system better to the interests and wishes of the people, without prejudice to the rights of government.

In regarding the condition of the peasantry, and in estimating the fertility of the soil, the wants of the people, and the proportion of produce and industry they were formerly accustomed to contribute towards supporting the establishments of government, it was deemed reasonable to commute all former burdens into a land-rent on a fixed principle ; from one-fourth to one-half of the estimated produce being required by the government, according to the respective value of the lands, which depended on the comparative facility that existed of fertilizing them by irrigation.\*

After having deliberately considered his design for two years,

\* History of Java, vol. I. p. 155—158.



a preliminary settlement of land was made by Mr. Raffles, according to the proposed system of which we have just delineated an outline. This was effected gradually, with strict attention to the rights of all classes of the Javan community; and in the actual execution of the plan, the existing institutions of the island were wisely left essentially intact, and merely suffered a slight change of form, in their adaptation to the new order of things. Most of the chiefs, for example, were not only allowed an equivalent for their former income; but they were also employed in services allied to their former duties;—the collection of the revenue, and the superintendance of the police. The cultivator having acquired rights which the chief could not violate,—holding in his possession a lease stating the conditions on which he cultivated his farm, and which could not be infringed with impunity,—no evil could result from employing the chiefs in collecting the revenue of districts; whilst, from their practical knowledge of the habits and individual concerns of the peasantry, of the nature of the seasons and the crops, they were the fittest persons for the office. For these services it seemed most expedient to remunerate them, either by an allowance of a certain per-centage on their collections, or by allotting to them portions of land rent-free. The native village constitution, the higher estates of which consisted of the chief, his assistant, another officer, and the priest, was preserved inviolate; and the chiefs, in many instances elected by the free-will of the villagers, were invariably continued in office as the immediate collectors of the rents, with sufficient authority to preserve the police, and adjust the petty disputes that might arise within the village; the government scrupulously avoiding all unnecessary interference in the customs, usages, or details of these societies.\*

While this interesting and philanthropic measure of internal administration was in preparation and in progress, Mr. Raffles was engaged, as a principal design of foreign policy, in contemplating and partially executing arrangements, the object of which was the permanent retention, by the British nation, of a political influence throughout the Eastern Archipelago. These measures also were

\* Hist. of Java, p. 157.

in perfect agreement with the views of Lord Minto; and their immediate importance consisted in the necessity of preserving what may be termed the police of the Eastern Seas, infested, from time immemorial, by the pirate-vessels of many Malayan states. The security of commerce with Java itself, together with the general maritime and commercial interests of Great Britain and of the East-India Company in these seas, was consequently involved in the object thus held in view by the Governor of Java.

When this island and its immediate dependencies first became subject to the British crown, it was the intention of Lord Minto that the Moluccas or Spice-islands should revert to their former connexion with and dependence upon the superior residency of Batavia, in which the same controul over the Archipelago would then have been vested, as it exercised during the flourishing times of the Dutch government of these colonies. This intention was not accomplished; but Mr. Raffles considered himself warranted by his instructions, in assuming the authority and influence of the British Government in the surrounding seas. With these views he adopted measures with reference to the great and important island of Borneo, for the purpose of opening its ports to general commerce, and finally establishing his country's influence in the island, so far as might be necessary for securing that object. In 1813, the Sultan of Pontiana, one of the Bornean states, solicited the protection of a British garrison, against the incursions of the pirates of Sambas, another native state in Borneo. The protection desired was immediately granted him; and an expedition against Sambas in the preceding year having failed, a new one was now undertaken, with the assistance of the Sultan, which proved completely successful, the fort at Sambas being carried by storm, and the Rajah compelled to retire into the interior of his dominions. In the following year, 1814, a similar expedition was dispatched against the Rajah of Bony, in Celebes, who had betrayed designs inimical to the British Government, and it was attended with similar success.

Whilst the Earl of Minto continued at the head of the Supreme Government in Bengal, the connections and authority thus established by Mr. Raffles in the Archipelagian seas, were sanctioned

by the approval of the Governor-General in Council. But on the arrival in India of the late Marquis of Hastings, then Earl of Moira, a different view of this subject, it would appear, was taken by the Supreme Government, and Mr. Raffles was directed to confine the jurisdiction of the Colonial Government to the island of Java and its immediate dependencies. The order was of course obeyed, but with the regret of the Governor of Java, who foresaw that many injurious consequences might result from it to the existing weight and dignity of the British Government in these seas, and to any influence or commercial connexion in them, which it might be considered advisable to retain, or to establish in them at a future period.\*

The happy results to the progress of Natural History of Mr. Raffles's government in Java, on account especially of their influence on the renewed vigour with which zoological science has within these few years been cultivated in our own country, now claim our attention and review. From the expiration of the first century after the Indian islands had become known to Europeans, down to the beginning of the present century, few additions had been made in them to any branch of Natural History, if even we include those contained in the earlier transactions of the Batavian Society. But the investigation of these interesting countries has since furnished some of the most important contributions which the sciences of Botany and Zoology have ever received. This investigation appears to have been commenced, and it was pursued with great ardour and success, by that meritorious naturalist Dr. Horsfield, who is still engaged in giving to the public the results

\* At this critical juncture of affairs among the European powers, as well as in their foreign dependencies, the entire sway over the Indian isles, with all the commercial advantages derivable from it, appears to have been within the just and honourable attainment of Great Britain. With Borneo, for example, "The Dutch, previous to the conquest of Java, had relinquished all title to interfere; and had it been an object with the British Government, the command of the whole of that great island was placed entirely at our disposal. By recent accounts, it appears that the Dutch, fully appreciating the vast and productive field which Borneo presents, have established themselves throughout that island." "Statement, &c." p. 17.

of his researches in Java. He arrived on the island with the intention of practising as a physician, about the year 1802; but after having been proposed to the High Regency, or Dutch Colonial Government, as a proper person to institute a scientific examination of the country, he was authorised to prosecute his botanical researches under the sanction of the government. He made several excursions into different parts of the island, and at length established himself at Surakarta, the capital of one of the native provinces, with the view of forming a *Flora Javana*; forwarding reports of his progress, from time to time, to the Batavian Society, together with collections of plants, and accounts of his discoveries in various departments of Natural History.

He collected about two thousand species of plants, which are now deposited in the Museum of the East-India Company; and the more remarkable new or imperfectly known of which will shortly be described by Mr. R. Brown, a naturalist whose peculiar qualifications for investigating their characters and affinities, and illustrating from them those departments of Botany to which they may more immediately relate, ensure the happiest results to the science, derivable from such a collection. In a paper hereafter to be noticed, Dr. Horsfield has himself described, for the first time, sixty Javan plants possessing medicinal properties, several of which would probably form valuable articles in general practice.

The Botany and the *Materia Medica* of Java formed, for several years, the principal objects of Dr. Horsfield's pursuit; "but as numerous insects were constantly occurring to him during his botanical excursions, he was naturally and almost imperceptibly led to the collection of these beautiful and interesting animals. Like most other entomologists, he commenced his career in the science by paying attention to Lepidopterous insects, to the collection of which he was the more induced by their great abundance in certain districts, during the latter part of the rainy season."\* Some of the most important and curious mammiferous animals and birds, either discovered or first described with precision by Dr. Horsfield, were also collected by him during the early part of his residence on the island. This was the case with two interesting species

\* *Annulosa Javanica*, Preface, p. v.

of Squirrel, described in his "Zoological Researches in Java," the *Sciurus Plantani* and *S. insignis*; and also with the *Bangsring* of the Javanese, a remarkable animal approaching in certain characters to the genera *Sorex* and *Mygale* among the Insectivorous *Carnivora*, but in other characters strikingly resembling the genus *Tarsius* in the order *Quadrumana*, and masked, in addition, by the external form and appearance of *Sciurus*, belonging to the *Rodentia*. On two other species of this singular form among *Mammalia*, as we shall have occasion further to notice in the sequel, Sir S. Raffles afterwards founded the genus *Tupaia*; and adopting this generic appellation, derived from the Malay name for the animals, Dr. Horsfield has described the *Bangsring* under the name of *T. Javanica*. In the same forests of Blambangan, in the eastern districts of Java, in which Dr. Horsfield first collected the *Tupaia*, he also discovered the *Felis Javanensis*, a new species among the smaller animals of that genus, since denominated *F. minuta* by Temminck, by an unnecessary change of name; together, in the year 1806, with the *Delundung* of the natives, now called by its discoverer *Prionodon gracilis*, an animal equally interesting with the *Tupaia*, though in a different branch of mammalogy, as exhibiting in an approach towards the *Viverræ* a deviation of the genus *Felis* from its type, affording the first known link of connexion between the feline tribe and the smaller animals among the typical groups of the order *Carnivora*.\*

\* The history of the progress of inquiry respecting the station in the groups of *Mammifera* of this animal, affords an interesting illustration of the important assistance in the classification of subjects of natural history, to be derived from the principles advocated in the *Horæ Entomologicae* of Mr. W. S. MacLeay. As we shall find the interference of Mr. Raffles to have been mainly concerned in securing for British Zoologists the support their late researches and conclusions in the most elevated paths of the science have received from Dr. Horsfield's labours, both as a collector and a naturalist, it will not be irrelevant briefly to relate this history.

When Dr. Horsfield first discovered the *Delundung*, its dental characters, lengthened muzzle, slender body, and five toes on its hind feet, appeared to him to refer it to the genus *Viverra*, as defined by Gmelin; and under this generic denomination he mentioned it in a catalogue transmitted to this country in the year 1812. And in 1819, that zealous cultivator of Indian zoology, General Hardwicke, influenced, probably, by the same considerations, described it

In the same year, 1806, Dr. Horsfield obtained his first specimen of that beautiful species *Falco cærulescens*, the smallest of its race, previously made known by Edwards, but with which Dr. Horsfield's researches have first rendered naturalists familiar; and which, uniting the characters of the Hawks and the Falcons, has been erected into the genus *Hierax*, by Mr. Vigors, as a distinct type of form. At the same period he discovered the genus *Eurylaimus*, forming the immediate connexion, as Mr. Vigors has pointed out,

in a paper afterwards published in the Transactions of the Linnean Society, under the name of *Viverra? Linsang*; though it would appear, from the mark of interrogation, that he was doubtful of its really belonging to that genus. But when Dr. Horsfield re-examined this animal, preparatory to describing it in his "Zoological Researches," the preponderance of what appeared to be its natural character, determined him to associate it with the genus *Felis*, under the specific appellation of *gracilis*, derived from its slender make. At the same time its peculiarities rendered it necessary for him to construct and define for its reception a distinct section of *Felis*, for which he proposed the denomination of *Prionodontidæ*, from the distinguishing dental characters of the animal.

Shortly after this determination, however, the attention of Zoologists in general became directed to Mr. MacLeay's profound views of natural arrangement, and Dr. Horsfield, when subsequently induced rigorously to re-consider the *Felis gracilis*, whilst examining a Javan species of *Mangusta*, (one of the modern divisions of the genus *Viverra*,) guided by the laws Mr. MacLeay had developed, arrived at the following conclusions: that the feline animals constituted one series and the viverrine another series in the animal kingdom; that the resemblance of the *F. gracilis* to the *Mangusta Javanica* and other *Viverræ* was founded only on relations of *analogy*, whilst by its relations of *affinity* it was associated with the *Felēs*; and finally that this animal must be regarded as the type of a distinct genus in the *family* comprising the species of the Linnæan *Felis*, to which he gave the name of *Prionodon*; the difficulties which had occurred in the classification of the animal being thus entirely removed. See Zool. Res. art. *Mangusta Javanica*.

Such then has been the progress and result of the inquiry respecting the station in nature of the *Prionodon gracilis*; but whilst this animal, it may be remarked, thus evidently belongs to the family of *Felidæ*, it as evidently appertains to a group in that family approximating to the *Viverræ*. And as the characters of the *Felis jubata*, Schreb., or Hunting Leopard, exhibit a deviation from the type of the genus towards the Dogs, (see Zool. Journ. vol. ii. p. 528;) combining these facts, we appear to have an indication of part of the succession of affinities among the *Carnivora*, in the situation of *Felis*, Linn., between *Viverra*, Gmel., and some of the modern sections of *Canis*, Linn.

between the families of *Todidæ* and *Caprimulgidæ* among the Fissirostral *Insectores*; combining the broad-based bill of the former with the wide gape of the latter family of Birds.

Having shewn by these instances the importance of Dr. Horsfield's early researches in Java, we have now the grateful duty of recording the means by which their results have become available to British naturalists, and by which also the subsequent discoveries and facts made known by their author have been contributed to the stores of British science. Mr. Raffles, shortly after the conquest of the island, became acquainted with Dr. Horsfield and his pursuits: justly appreciating the utility of such exertions, in a country the productions of which were nearly unknown to science, he secured their results for the British nation, by obtaining for this naturalist the liberal support and patronage of the East-India Company. In pursuance of the arrangement which was entered into, part of Dr. Horsfield's collection of *Mammalia*, including specimens of the *Sciurus Plantani*, the *Tupaia Javanica*, the *Mydaus meliceps*, &c., and a large collection of Birds, were transmitted to the Court of Directors in 1812, together with a descriptive catalogue in manuscript, in which the new species were particularly noted. Dr. Horsfield's plans of research were soon of course considerably extended, and they were attended with commensurate success.

Mr. Raffles being now engaged in renovating the Batavian Society of Arts and Sciences, as already narrated, obtained from Dr. Horsfield several interesting communications to its "Transactions." The fabulous history of the Bohun Upas or Poison-tree of Java, founded on a gross fabrication stated to have been written by Foersch, a Dutch surgeon at Samarang, which was published in 1783, is well-known to all who are conversant with the history of science, as well as to all lovers of the marvellous. The appalling effects attributed to the poison, its alleged employment in the cruelties of a despotic government, and the emphatic strains in which its fell powers have been pourtrayed by the genius of Darwin, who describes, in his "Loves of the Plants," the spot where

———— Fierce in dread silence on the blasted heath  
Fell UPAS sits, the HYDRA-TREE of death, ———

have obtained for this romantic story a celebrity in modern times almost equal to that of the Lernæan Hydra, the Chimæra, or any other fiction of Classical Antiquity. A statement of facts amounting to a refutation of it had been published in one of the early volumes of the Batavian Transactions, and the Historian of Sumatra, Mr. Marsden, had also given a virtual refutation of the fable; but the scientific world had so long remained under the influence of the imposition, and the popular opinion in Europe still favoured the delusion so strongly, that it was very desirable to obtain from a naturalist residing on the spot, the real history of this remarkable tree, and the poisonous agency of its sap. In compliance with Mr. Raffles's request to this effect, Dr. Horsfield communicated to the Society a paper detailing the literary history of the *Upas antshar*, the tree on the properties of which the romance of Foersch had been founded, with its botanical characters, the mode of collecting the poison, and a series of experiments upon it instituted by himself. In this paper is also described the *Tshettik*, a creeping shrub of Java, which yields a gummy substance still more violent than the *Antshar* or any other vegetable or perhaps even mineral poison, especially when applied to wounds; and a series of experiments upon it are related, which prove it to be quite peculiar in its mode of action on the system, and shew the erroneous character of M. Delile's inferences from his previous experiments on the *Tshettik*.\*

\* Dr. Horsfield's paper, entitled "An Essay on the Oopas, or Poison-tree of Java," has been reprinted in the Asiatic Journal, vols. i. and ii.; and an abstract of it will be found in the "Journal of Science and the Arts," vol. ii., in which Mr. Brodie's experiments on the poison of the *Antshar* are also noticed; but as no comparison appears ever to have been instituted between Mr. Brodie's investigation and that of Dr. Horsfield, it becomes interesting to shew that the results obtained by the latter with the *antshar* fully confirm the physiological inductions of the former, as to the mode of action of vegetable poisons in general.

Mr. Brodie relates four experiments on the poisonous effects of the *Antshar*, or *Upas antiar*, as he denominates it. One of them was performed on a dog, another on a cat, and two on rabbits. The appearances on dissection are described in every instance. A portion of the dried poison, supplied by Mr. Marsden, was made into a thin paste with water, and inserted into a wound previously made in each animal. After describing the results, Mr. Brodie



Dr. Horsfield communicated to the eighth volume of the *Batavian Transactions*, likewise at the instance of the President, several

states that "it appears from these experiments, that the *upas antiar*, when inserted into a wound, produces death (as infusion of tobacco does when injected into the intestine) by rendering the heart insensible to the stimulus of the blood, and stopping the circulation."—*Phil. Trans.* 1811, p. 196—198.

Dr. Horsfield relates seventeen experiments, selected from a larger number: eight of them were performed on dogs; six others on the *Lemur volans*, Linn., *Lutra leptonyx*, Horsf., a mouse, a monkey, a cat, and the Javan domestic ox, respectively; and three on birds. The appearances on dissection are described in eight instances. All but two of the experiments were made with poison collected by Dr. H. himself, within six years after the period of its collection; but in most instances with still fresher *antshar*, and in six cases with the fresh sap unprepared. The poison was always applied by means of a pointed dart of bambû, dipped into the fluid *antshar*, which was suffered to dry upon it by spontaneous evaporation, (for when used in a fluid state it adhered to the integuments, and could not be inserted in the wound in sufficient quantity :) with the weapon so prepared, the wound was made and poisoned at the same time, the integuments however having been previously divided.—*Trans. Bat. Soc.*, vol. vii, art. 8.

It appears from a comparison of the two series of experiments, that the results obtained by Dr. Horsfield agree in all essential circumstances with those described by Mr. Brodie; and therefore confirm the inference which that physiologist has drawn respecting the mode of action of the poison. The symptoms and appearances on dissection agree in both, so far as detailed in a comparable manner; but Dr. Horsfield does not appear to have attended to the state of the heart while the animal remained alive; which organ Mr. Brodie found to beat feebly and irregularly before respiration was affected. In Dr. H's experiments the animals appear in general to have survived the application of the poison longer than in Mr. Brodie's, though they were sooner and more violently affected by it; laborious respiration being in most instances produced, with violent spasms of the pectoral and abdominal muscles, and in some instances a slight effect on the brain, indicated by drowsiness and giddiness. But these apparently contradictory effects are explained by the circumstances under which the two series of experiments were respectively made. In Mr. Brodie's mode of applying the poison, a greater quantity must have been exposed to absorption by the system, than in Dr. Horsfield's; whilst on the other hand the *antshar* employed by Mr. B., had, in all probability, been preserved for many years in a *dried state*, in this country, and would consequently be taken up by the system with less rapidity, and in a less active form, than the fresh and recently fluid substance used by Dr. Horsfield. The condition of the poisoned wound, as described by Dr. H. in two or three cases only, appears to confirm Mr. Brodie's statement, founded on experiments made with

other memoirs on the Natural History of the island. One of these, entitled "A short account of the Medicinal Plants of Java," comprises the history of the Javan medicinal plants introduced into the European systems of *Materia Medica*, of those which are only mentioned by writers treating exclusively of Indian plants, and of those plants of medicinal utility, discovered or added to the list by the author himself. Another, communicated to Mr. Raffles in 1812, is occupied chiefly by an account of the volcanic ranges of the island, and of the phenomena they present; including particulars of the eruption and engulfment of the mountain Papandayang, in 1772, "an effect of volcanic action," Dr. Daubeny has observed, when quoting Dr. Horsfield's statement, "which, for its extent, seems to exceed almost any that has been hitherto noticed."\*

When authorised, as just narrated, to pursue his researches on account of the East-India Company, Dr. Horsfield was established in an extensive and highly cultivated plain, situated nearly in the centre of Java, and elevated about 200 feet above the level of the ocean. Here the collection of insects was carried on with zeal and perseverance, not only by Dr. Horsfield himself, but by various native assistants, who had been properly trained for this purpose. His labours in entomology, as we have noticed, had commenced with the *Lepidoptera*, to the metamorphoses of which he devoted so much attention, that he has been "enabled to bring to the shores of Europe," Mr. W. S. MacLeay has remarked, "a more valuable mass of entomological information, than has ever

the poison from Guiana, called *Woorara*, that poisons, when applied to wounds, affect the vital organs, by entering the circulation through the divided blood-vessels; agreeably to the popular opinion on the subject. And like other poisons that are very powerful when applied to wounds, the *antshar*, by Dr. H's experiments, is much less active when taken internally.

It has been stated in the text, that Dr. Horsfield's experiments on the *Tshettik* contradict those of M. Delile, which are quoted by Mr. Brodie: room will not permit us to enter upon the subject here, but Dr. H's researches appear to furnish so interesting an addition to Toxicology, that a separate paper on them has been drawn up, and will appear in the Philosophical Magazine for February next.

\* Description of Volcanos, p. 316.

hitherto been collected within the tropics."\* His researches however were soon extended to Annulose animals of every class; and his collection, now in the possession of the East-India Company, and deposited in their Museum, may very fairly be considered as affording a general view of the entomology of the plain above mentioned, and a kind of typical outline of the entomology of Java itself. These pursuits were interrupted in 1813, on account of the mission to the neighbouring island of Banca, with which, as we shall presently notice, Dr. Horsfield was charged by the Governor of Java. But early in the year 1815, they were resumed with renewed energy; and, during the interval from this period until that of his finally quitting the island in 1817, the Coleopterous insects in the collection were principally obtained. After a visit to Sumatra, in the following year, under circumstances to which we shall advert in a future section of this memoir, Dr. Horsfield arrived in England with his collections in the year 1819.

In concluding this view of the improvements in natural history, as cultivated in this country, resulting from Mr. Raffles's appointment to be Governor of Java, we will briefly notice the contents of the works in which Dr. Horsfield has described his collections, as indicative of the extent and importance of the latter. He made the first report of his labours to the scientific public in a paper entitled "Systematic arrangement and description of Birds from the Island of Java," which was read before the Linnean Society on April the 18th, 1820, and was published in the thirteenth volume of the Society's Transactions. In this paper are described all the birds collected by the author in Java, and deposited in the East-India Company's Museum; a corrected catalogue of them has since appeared in his "Zoological Researches in Java:" it enumerates 205 species, of which 117 are marked as new, and among these are twelve new genera, all belonging to the order *Insectores*; viz. *Eurylaimus*, Horsf., *Irena*, Horsf., *Myophonus*, Temm., *Timalia*, Horsf., *Iora*, Horsf., *Brachypterix*, Horsf., *Enicurus*, Temm., *Megalurus*, Horsf., *Mirafra*, Horsf., *Orthotomus*, Horsf., *Pomatorhinus*, Horsf., and *Prinia*, Horsf. The "Zoological Researches" contain detailed descriptions, pic-

\* *Annulosa Javanica*, Preface, p. v, p. vii.

torially illustrated in a splendid manner, of the most interesting quadrupeds and birds of Java, including the results of the author's zoological investigations in Banca. Thirty-seven species of *Mammalia* are described in this work, of which twenty-seven are new; and two of them, viz. *Tupaia Javanica*, and *Prionodon gracilis*, are also generically new. From this enumeration some idea may be derived of the accessions to Zoology afforded by Dr. Horsfield's labours, in two departments of the science; whilst the "*Annulosa Javanica*" already published, and the forthcoming "*Lepidoptera Javanica*," will afford ample testimony to their value in entomology.

In 1813, as we have had occasion to state already, the celebrated island of Banca, which had never been explored by Europeans, became a possession of the British Government. Mr. Raffles immediately appointed Dr. Horsfield to visit this island in conjunction with the Resident, as well as the capital of the native state of Palembang, on the adjacent coast of Sumatra. The examination and scientific survey of Banca, together with a report upon it, describing its natural productions in general, and communicating a particular account of the alluvial deposits of tin-ore which are so abundantly worked in its plains, with the mode of working them and of smelting the metal, occupied Dr. Horsfield during 1813 and 1814; and their results are calculated to excite great regret that the Island should ever have been alienated from the British Empire. While resident in Banca, Dr. Horsfield discovered in the extensive forests near Jeboos, one of the mining districts, the *Tarsius Bancaus*, one of the only four known species of this singular genus of *Quadrumana*, which is apparently peculiar to the Eastern Islands.\*

\* It is proper to state on this subject, that M. Temminck considers the *Tarsius Bancaus* to be merely the young of *T. Daubentonii*, of which, he says, "les naturalistes ont formé jusqu' à trois autres espèces purement nominales." Mon. de Mammal. Tom. I. Tab. Meth., p. xvi.

ART. XL. *Observations on the Osteology of the Fennec.*  
By WILLIAM YARRELL, Esq., F.L.S., &c.

[IN the account of the *Fennec* which lately appeared in the Appendix to Colonel Denham's travels into the interior of Africa, the zoological department of which had been drawn up by us conjointly, we had to lament our being unable to ascertain the immediate affinities of the species in consequence of the impossibility of accurately examining the system of dentition in a set up specimen. We scarcely imagined at the time that we should so soon have had the opportunity, which has since occurred, of supplying this deficiency. A fine specimen of the animal was lately presented\* to the Zoological Society, immediately after death, by which means a complete skeleton as well as a preserved skin was set up. With the permission of the Society, we submitted the skull for examination to Mr. Yarrell, than whom no one was more capable of doing justice to the subject, and whose valuable collection of skulls, more particularly rich in the genus *Canis*, gave him the most ample means of comparison. We beg leave to lay the result of his examination before our readers; who, we have reason to think, will agree with us that all doubts are now removed as to the affinities of this little animal, and that it may be restored to the genus *Canis*, where it was originally placed by Bruce.

JOHN GEO. CHILDREN,  
N. A. VIGORS.]

THE teeth of the *Fennec* agree in every particular with the dentition characteristic of the genus *Canis*, to which it appears to me decidedly to belong; the animal being young, the points are more produced and sharper. The frontal sinus is somewhat less than the general proportion observed in this family, and the top of the head has no appearance of the central ridge for the insertion of

\* This rare animal was presented to the Society by Mr. Cross of Exeter Change, together with many other valuable subjects.

the upper edge of the temporal muscle so conspicuous in the *Canis Lupus* and *Lycæon*, *Vulpes* and *lagopus*. There is a greater development of the lateral portions of the parietal bones by which it obtains a larger volume of brain; the zygomatic arch is more compressed, and the post orbital portion of the bones forming the arch is much weaker.

The head compared with those of the most perfect English breed of dogs more closely resembles that of the *Terrier*, the *Canis Britannicus* of authors,\* than any other, but the muzzle in the *Fennec* is more pointed. The form of the lower jaw and its condyles also agrees precisely with the same parts in the dog.

The head of the *Fennec* however presents another peculiarity which must not be omitted; the auditory cells in this little animal are even larger than the same parts in our common *Fox*, although the *Fennec* is two-thirds less than the *Fox* in size. The external conch is also as large in proportion as these cells, and judging by analogy it is probable that the *Fennec* possesses the sense of hearing to an extent far beyond that of most other quadrupeds.

To render this more evident, some further explanation may be necessary. The most perfect organs of hearing may be described as composed of three distinct portions, each portion containing several separate parts.

The first, external, consisting of the conch, the canal, and the membrana tympani; the third, internal, containing the vestibulum, semicircular canals, cochlea, &c.; the second part, intermediate in situation, and connecting the first and third portions, consists of the ossicula auditus, a connected series of four † very small and beautifully formed bones, which by their power of communication transfer the external impressions received upon the membrane of the tympanum to the internal cells partly occupied by portions of the auditory nerve.

In quadrupeds generally, the auditory cells are enlarged when the external conch is small, and vice versâ, as the crania of the *Weasel* tribe will shew, when compared with those of hares and

\* The *Canis terrarius* of Dr. Caius, so called from the eagerness with which this species goes to earth.

† Called the malleus, incus, os orbiculare and stapes.

rabbits. The ossicula auditus are considerably larger and much more perfectly defined in form in our common *Squirrel* (*Sciurus vulgaris*) than in the *Hare* (*Lepus timidus*) notwithstanding the great disproportion in the size of the two animals; the quantum of power to collect vibrations of sound, depending on the form and area of the conch, seems to explain this circumstance satisfactorily; this smaller external part in the squirrel requiring a more perfect internal construction and communication.

Having stated that the auditory cells in the *Fennec* were larger than those of our common *Fox*, the ossicula auditus as large in proportion, and equally perfect in form, and the external conch of great magnitude, as may be seen in the specimen of this very rare animal in the Museum of the Zoological Society which has been submitted to me for examination, it may be inferred, that its powers of hearing are commensurate with the extraordinary development of each particular part.

The skeleton of the *Fennec* so closely resembles that of the *Dog* as to make a particular description unnecessary; and there is also one other point of similarity, the pupil of the eye is circular.

W. Y.

ART. XLI. *Observations on the Zoology of the Caribæan Islands.* By the Rev. LANSDOWN GUILDING, B.A., F.L. & G.S., M.W.S., &c.

[Continued from Vol. ii. p. 444.]

*Radiata Caribeana.* (No. 1.).

Familia PORPITIDÆ, Guild.

Genus POLYBRACHIONIA,\* Guild. PORPITA, Lam. &c.

Char. gener.

*Corpus* orbiculare valdè depressum, ad periphæriam multi-radiatum.

\* Nomen a πολυς numerosus, et βραχίον brachium.

*Sustentaculum*† dorsale, cartilagineum, nudum, complanatum, rotundum, radiatum, concentricè striatum.

*Pallium* angustum, liberum, sustentaculum cingens.

*Brachia* numerosa, parallela, longitudine varia, elongata, subtùs affixa, mox declinanda ad prædam captandam.

*Os* inferum, centrale, bursiforme, extensile.

*Tentacula* plurima difformia, suctoria, ventrem totum tegentia.

*Ova* minutissima, innumera, inter tentacula nidulantia.

*Polybrachionia Linnæana.*

*P.* sustentaculo lato vitreo; corpore cœruleo; tentaculis pallidis; brachiis serie triplici glandulosis, glandulis pedunculatis.

Habitat in mari Caribæo, superficie natans tempestate serenâ, vel potiùs fluitans, prædam brachiis quibusdam vel omnibus subitò declinatis amplectens. *Brachia* facilè abrumpit atterrita.

Animal miræ pulchritudinis, tanto nomine dignum.

Diam. pallii, brachiis exclusis,  $11\frac{1}{2}$  lin.

Det nomen triviale immortalis CAROLUS VON LINNÉ, *Zoologorum et Botanicorum Pater, Dux, Princeps.*

Tab. X.

*Expl. tab.*

Fig. 1. Animal pronum auctum. 2. Supinum. *a, b, c,* Os formâ mutatâ. *d,* Ova mag. nat. *e, f,* Eadem plus minusve aucta.

The old genus *Porpita* should be restricted to contain those species which resemble *P. appendiculata* of Bosc, which have few and broader arms. The *Medusa Porpita* of the "Amœnitates Academicæ" seems nothing more than the central disk of some species deprived of all the organs of the body.

---

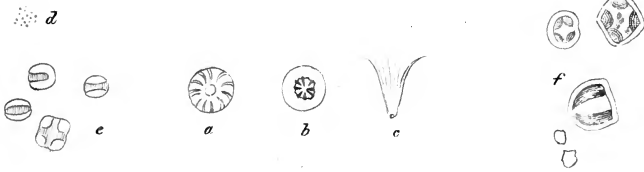
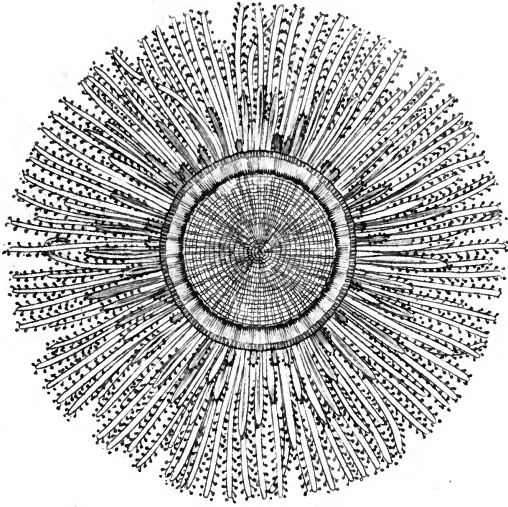
*Analecta Zoologica.*

I know not whether that invaluable instrument, the Camera Lucida of Dr. Brewster, is often used in England in taking the outline

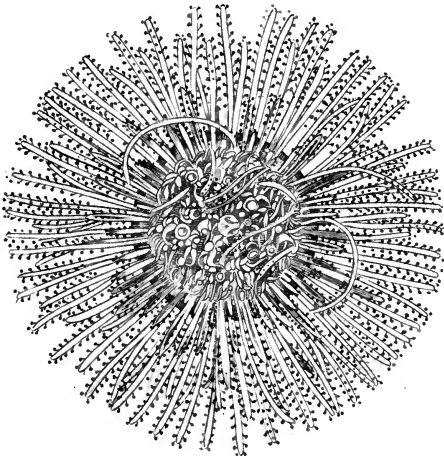
† This term may be also applied to the central support of the *Cephalopoda* which supplies the place of the *vertebræ*.



1



2





of such subjects as can be kept stationary. The draftsman will find it beyond all praise in sketching the figure of any thing, from a moderate sized insect to a subject that would require an atlas sheet, and he will give an accuracy not to be obtained by the unassisted hand without abundant labour. In tracing the outline of shells, a square bit of soft deal and a long fork stuck upright on it should be always at hand; a lump of common bees-wax pressed against the handle will serve to hold even heavy shells, without injuring the most delicate. This simple instrument is easily turned, or moved to a greater distance, for altering the diameter or profile of the figure, which can be finished under the naked eye with all its minute details.

---

We used to wonder how those islands, which owe their origin to volcanic convulsions, or have sprung from the bosom of the ocean built on reefs of corals, could become peopled with the countless animals which they now support; especially with insects, those delicate and frail beings, which would perish in the sea, as it was formerly supposed, in their flights from distant lands. The observations which have been made of late, and recorded by Messrs. Kirby and Spence, have set the matter at rest: and I am able now to add a little to the list of migrating insects.

1. A specimen of *Acherontia (Sphinx) Atropos* flew on board the Chieftain of London, on her last voyage to the West Indies, when at least a thousand miles from the nearest land of the Western Islands, and was secured by the captain.

2. A few weeks since, *Erebus strix*, a moth equalling in size the Bats of Europe, lighted on the deck of a small vessel of this port, about twelve miles to the eastward of St. Vincent, which had doubtless been blown off the land of Demerara, where it is found, and carried to us by a strong current of the atmosphere. It now stands in my cabinet a fine and perfect specimen of this giant species.

3. A species of *Colias* was lately sent me from Trinidad, which was observed in a continued flight of thousands, traversing that island from west to east: they were also observed at sea in the neighbouring gulf.

A single tree, washed down the Oronoko by the torrents of that mighty river, might easily transport numerous species of *Coleoptera* under the bark, and in the labyrinths of the trunk, and when washed on shore would soon people the neighbouring woods.

It is worthy of being recorded, that a noble specimen of the *Boa constrictor* was lately conveyed to us by the currents, twisted round the trunk of a large sound cedar tree, which had probably been washed out of the bank by the floods of some great South American river, while its huge folds hung on the branches, as it waited for its prey. The monster was fortunately destroyed after killing a few sheep, and his skeleton now hangs before me in my study, putting me in mind how much reason I might have had to fear in my future rambles through the forests of St. Vincent, had this formidable reptile been a pregnant female, and escaped to a safe retreat.

---

The Crustaceologist does not seem to have accounted for the *spurious* legs, as he unjustly calls them, in many genera of Crabs, which appear in the works of European authours. I once imagined that they were solely connected with the oviposition of those curious beings, and in *Lithodes arctica* and the *Porcellanæ* (which so beautifully connect the short-tailed with the long-tailed decapod *Crustacea*) from their weakness and position they perhaps serve no other purpose. In the *Dromiæ* however, and some other genera, they are quite dorsal, and wonderfully adapted to the purpose to which they are applied, that of holding their house upon their back, as the spurious posterior legs of the *Paguri* cling to the deserted shells they have seized for their retreat. I have lately captured several specimens of these dorsipedous *Dromiæ* having on their back houses of sponge, excavated and fitted to their shapes, under which they lie concealed while their prey approaches. In one species the house was inimitably cut, having loop-holes for the eyes, and ridges on which the dorsal legs were fixed. The sponge does not lose its vitality, though it is probably cut and modelled by the crab; a circumstance which would assist it in deceiving the animals on which it feeds. I have observed some Crabs to retreat for shelter among the countless sutorious

tentacula of radiated animals, where they seemed to be well received. Probably, like the *Pinnotheres*, they are mutually serviceable in the capture of food.

It may be useful in this place to caution the collectors of *Crustacea* against killing the specimens they procure too suddenly: the marine species should be allowed to die quietly in a little sea water exposed to the sun. If thrown into spirit, they commonly cast off their arms or legs. The colour of the ova, the eyes, and crust should be noted down, or it will be unsafe to describe from specimens dried or changed by spirit. When this cannot be done, uncoloured figures are infinitely preferable, from the perishable colouring of Crabs. If it be thought advisable to preserve one specimen of each species accurately extended, the antennæ may be fastened with weak gum-water to long strips of card for a week, from which they are easily loosened by hot water. The larger Crabs should be perforated in the sides of the abdomen and arms for the removal of as much flesh as possible, and the cavities well washed out with a solution of arsenic in alcohol. The long-tailed *Decapoda* are easily cleaned by cutting off the tail, which may be glued on when dry. When pins are used for fastening specimens, the thickest are to be preferred, as they too soon corrode when the specimens have not been soaked a little in spirit.

---

Mr. Stephens, in the family of *Hirundinidæ*, described in his supplement to the continuation of Shaw's Zoology, has separated under the generic title of *Chatura*, a group of birds which I had named *Acanthura* in my cabinet. He has however not been fortunate in separating it from *Cypselus*, by the intervention of the genus *Hirundo*, to which it is less nearly allied than to the *Swifts*. With these, they have elongate wings, the same scream, the same bold rapid flight, and general habits. *H. acuta* of Stephens may stand as the type. We have one species abundant here, but with whose nidification I am not acquainted: it probably builds in our inaccessible precipices. The strong tail-feathers with their spurious naked termination may probably be useful in supporting the

animal in the attitude of the Woodpeckers, while building in the cavities of rocks.

We have but few of this family in St. Vincent: among them is a Swallow which roosts, and I believe builds, in the rock of the sea shore. It is curious to observe this bird in calm weather skimming patiently along the sea in search of insects, evidently ignorant of the fact that they are confined to fresh water, and do not sport on the surface of salt waters.

[ *To be continued.* ]

---

**ART. XLII.** *Observations on the Jaw of a Fossil Mammiferous animal, found in the Stonesfield slate. By W. J. BRODERIP, Esq., Sec. G. S., F.L.S., &c.*

SOME years have elapsed since an ancient stone-mason, living at Heddington, who used to collect for me, made his appearance in my rooms at Oxford with two specimens of the lower jaws of mammiferous animals, imbedded in Stonesfield slate, fresh from the quarry. At the same time he brought several other very fine Stonesfield fossils, the result of the same trip. One of the jaws was purchased by my friend Professor Buckland, who exclaimed against my retaining both, and the other I lent to him some time ago. Dr. Buckland's specimen, which wants incisor and canine teeth, has been examined by M. Cuvier, and is figured by M. Prevost as an illustration to his "Observations sur les schistes calcaires Oolitiques de Stonesfield en Angleterre," &c.;\* the other was lost, after the Professor had returned it; and the loss was, most unjustly, as I must now acknowledge, attributed to him. To my no small gratification this specimen has just been found, and forms the subject of the following sketch.

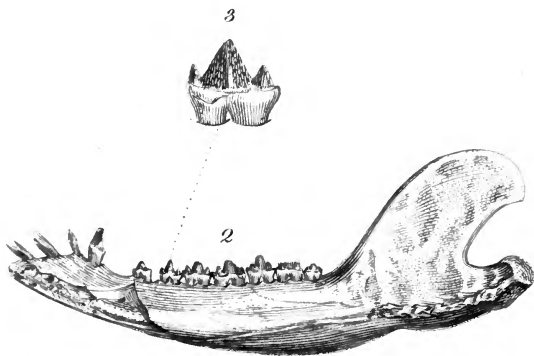
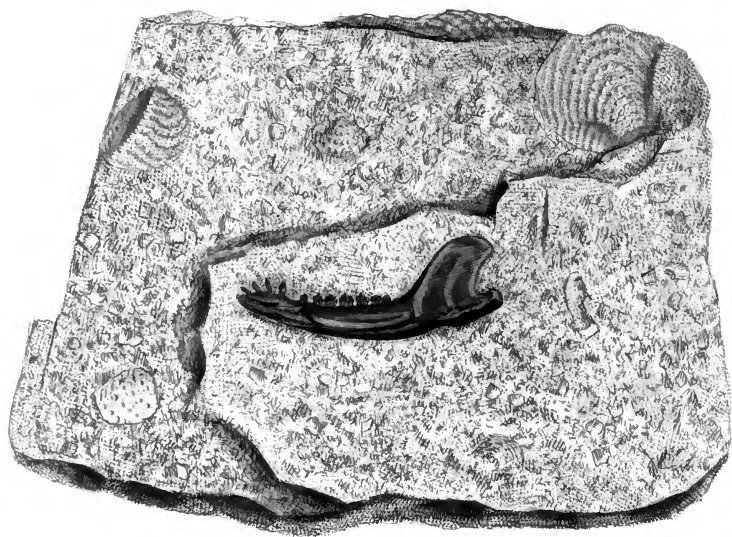
In the Professor's "Notice on the Megalosaurus, or great fossil Lizard of Stonesfield,"† the following passage occurs. "The

\* Ann. des Sciences Nat. Avr. 1825.

† Transactions of the Geological Society, vol. I. p. 390. Second series.



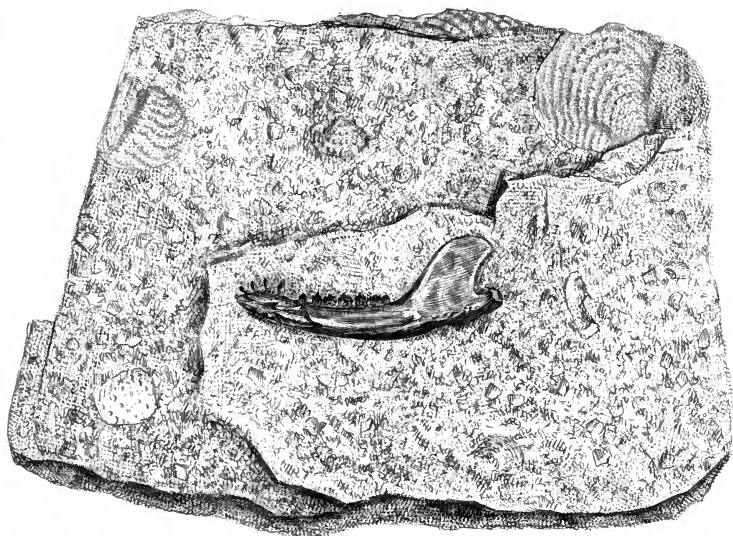
1



Jaw of a Fossil Mammiferous Animal. p. 408.



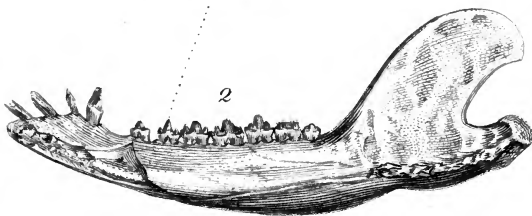
1



3



2





other animals that are found at Stonesfield are not less extraordinary than the *Megalosaurus* itself. Among the most remarkable are two portions of the jaw of the *Didelphys* or Opossum, being of the size of a small Kangaroo Rat; and belonging to a family which now exists chiefly in America, Southern Asia, and New Holland. I refer the fossil in question to this family on the authority of M. Cuvier, who has examined it; and, without the highest sanction, I should have hesitated to announce such a fact, as it forms a case hitherto unique in the discoveries of geology: viz. that of the remains of a land quadruped being found in a formation subjacent to chalk."

The learned author of the article "on the Transactions of the Geological Society of London," in the 34th vol. of the Quarterly Review, after referring to this passage, says, \* "As this fact is completely at variance with all preceding observations, it is not surprising that it has been received with some scepticism. M. Constant Prevost, who has himself visited Stonesfield, has lately published a memoir, in which every argument that can be urged to invalidate Dr. Buckland's opinion is put forth with great ability and with a spirit of fairness; but all this has not in the least shaken our reliance on the accuracy of the statement. In the first place it is admitted that the remains in question were decidedly imbedded in the Stonesfield slate. To this stratum "in working the quarries at Stonesfield, they descend by vertical shafts through a solid rock of cornbrash and stratified clay, more than 40 feet thick."† M. Cuvier, who has re-examined the fossil in question since the objection was started, still pronounces the animal to have been mammiferous, resembling an Opossum, although of an extinct genus, and differing from all known carnivorous mammalia in having ten teeth in a series in the lower jaw.

The ten teeth represented in the figure accompanying M. Prevost's memoir,‡ are evidently grinders, and somewhat resemble the molar teeth of my specimen, which has, however, only seven grinders; and, when it was lent to Dr. Buckland, they were the only teeth apparent. He, however, caused the stone to be

\* P. 529.

† Trans. Geol. Soc. vol. i. p. 393. Second Series,

‡ Pl. 18. fig. 1, 2.

carefully scraped away, and there appear, in addition, a canine tooth and three incisors. There is room also for a fourth: the end of the jaw is fractured, and there are traces of what may be the alveolus of a fourth incisor. With this addition, the specimen would give the exact number of teeth in the half of a lower jaw of a *Didelphis*, viz. four incisors, one canine, seven grinders. The fossil, which is in high preservation, is imbedded in a slab of Stonesfield slate, together with *Trigonia* and other marine exuviae; the whole mass exhibiting the oolitic structure in the most satisfactory manner.

My specimen consists of the right half of a lower jaw, the inside of which is presented to view, [Pl. XI.] To say nothing of the difference of form in the jaw-bone, M. Prevost's figure gives us the representation of a portion of a lower jaw with ten grinders therein: my fossil has only seven, and appears to have been part of an animal generically different. The teeth are distinctly separated, and those who are best qualified to judge are of opinion that the jaw did not belong to a young individual. The well defined ridges and decided features of the bone denote a full grown animal: the sharpness of the teeth makes it probable that it was not an aged one.

We have now the figures and descriptions of two specimens of mammiferous animals which have been found at Stonesfield: they are apparently referable to two genera; and, notwithstanding the opinion expressed by M. Prevost, I will venture to add that they have been found in the true oolitic series lying far beneath the chalk.

But, it appears, that there is yet another specimen. M. Prevost in his memoir \* says, "À ma connaissance, il a été trouvé déjà à Stonesfield, *trois* échantillons de mâchoire inférieure qui paraissent provenir d'animaux de la même espèce; l'un est dans le musée de l'université d'Oxford, l'autre est possédé par une personne qui réside à Londres, et le troisième a été rapporté par M. Brochant du dernier voyage qu'il a fait en Angleterre: ce dernier échantillon est bien moins parfait que celui d'Oxford, dont je donne ici le dessein de grandeur naturelle, pl. 18., fig. 1, et un autre dessein quadruple, pl. 18, fig. 2."

\* P. 47, of the extract.

If the author of these observations be the person residing in London, who is mentioned above as the possessor of one of the three specimens, he must be allowed to doubt the identity of the species, for the reasons above given. If any other resident in London possesses a specimen of the jaw of a mammiferous animal imbedded in the Stonesfield slate, there will be no less than four instances of mammiferous remains from the same locality: but we never have heard of more than three.

It might have been desirable to keep back this notice till M. Cuvier had seen and pronounced on the specimen now figured: but it has been so long lost to the scientific world, and it is, unless the writer is deceived by persons of high authority in such matters, of so much interest to geologists, that he no longer feels justified in delaying the appearance of the figure. He has the less anxiety on the subject of the imperfections of this hasty sketch, being well assured that the learned Professor, who first publicly noticed the discovery of mammiferous remains in a stratum far below the chalk, will amply supply all omissions and inaccuracies, when he gives to the world the result of his researches, in his promised description of the most remarkable remains that occur at Stonesfield.\*

As the history of this animal rests only upon the portion of its lower jaw, figured in the plate accompanying the present memoir, (for the specimen figured by M. Prevost appears to have belonged to a different animal,) it would perhaps be presumptuous in me to pronounce on its generic identity with *Didelphis*, Cuv. But until some more able anatomist shall correct the generic name, I may be permitted, for the sake of convenience and perspicuity, to name it *Didelphis Bucklandi*.†

\* See Geol. Trans. vol. I. p. 394. Second series.

† It may not be uninteresting to note, that a recent species of *Trigonia* (figured by Mr. G. B. Sowerby in his account of some rare shells brought from the Pearl islands) has very lately been discovered on the coast of Australia, that land of marsupial animals. Our specimen lies imbedded with a number of fossil shells of that genus. The individuals are of the same species so frequently found at Stonesfield; and, as that species appears not to be named, I propose, at the suggestion of Mr. James Sowerby, to name it *Trigonia impressa*. The shells are most numerous on the under side of the slab.

Dr. Fitton has kindly furnished the following communication : and I cannot help supposing, that if a geologist of so much experience as M. Prevost is acknowledged to be, had enjoyed an opportunity of studying throughout the relations of the Stonesfield slate, he would hardly have entertained the theory which he has suggested.

DESCRIPTION OF PLATE XI.

- Fig. 1. The jaw in situ, of its natural size. The dimensions of the slab, (which is reduced in the figure,) are  $5\frac{1}{4}$  inches by  $5\frac{1}{2}$ . Length of the jaw, 1 inch 4-10ths: breadth, 2-10ths; at the coronoid process, 9-20ths.
- Fig. 2. The jaw magnified twice in length.\*
- Fig. 3. The second molar tooth magnified six times.

ART. XLIII. *On the Strata from whence the Fossil described in the preceding Notice was obtained.* By W. H. FITTON, M.D., F.R.S., Pres. G.S.

[In a Letter addressed to W. J. BRODERIP, Esq.]

10th December, 1827.

MY DEAR SIR,

MY acquaintance with Stonesfield was derived from an excursion made last spring, in company with Messrs. Oeynhausien and Dechen of Berlin, two distinguished Prussian geologists, who were at that time travelling in England; and I now send at your desire some account of the strata that have furnished your very interesting specimen,—though my notes were not taken with any view to publication, and probably require several corrections. Our visit was too short to admit of detailed enquiry; but we saw quite enough to be convinced that the beds including the assemblage of fossil remains that has excited so much attention, are a conformable portion of the general descending series of England; the true place of which cannot be far distant from that assigned to them by Smith, Greenough, Conybeare, Buckland, and other

\* The teeth, as here represented, are too crowded.

English geologists. And I have no doubt that more extensive examination would have removed all uncertainty upon this subject from the mind of my friend Mr. Constant Prevost,\* with whose candour and accuracy as an observer, I have had frequent opportunities of becoming acquainted.

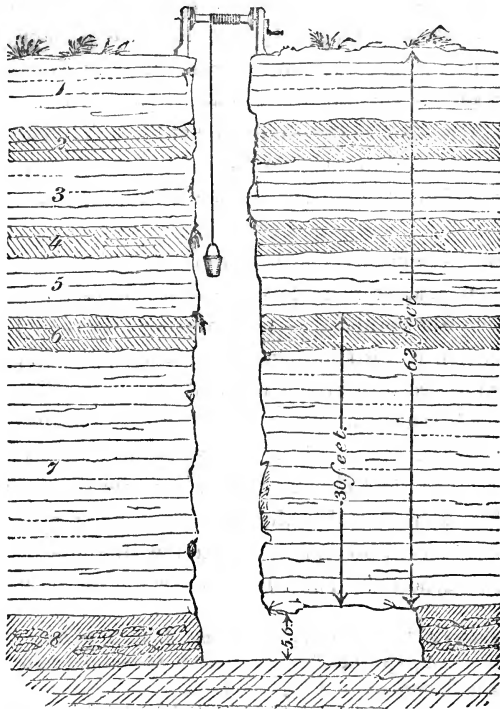
The only question in the present case is, whether the Stonesfield slate is to be considered as one of the group of strata constituting the great oolite?—in short, whether it is inferior to the Oxford clay? The precise place of the slate, and the form of its equivalents in other quarters, are distinct considerations: and the evidence in proof of its true situation might be complete, although no similar deposit had been detected in any other district. But, though no other assemblage of fossils like that of Stonesfield has yet been found among the oolitic strata, slaty limestone, holding nearly the same geological place, is well known to occur in several other localities—where the strata are not more different from each other than the distant portions of other groups, respecting the identity of which no doubt has ever been entertained.

In crossing the country, from Oxford to Stonesfield, the Oxford clay, with its characteristic fossils is first observed; and this is succeeded by the cornbrash,—the uppermost stratum of the great oolitic group, which is seen beneath the clay in several quarries on the sides of the road to Woodstock and Blenheim. The aspect of the country hereabouts accords perfectly with that of a series of continuous strata, rising with a very gentle inclination towards the north west; nor did I observe anything in the vicinity of Stonesfield leading to a suspicion that the strata upon which the village itself is placed, were not the same with those in its immediate neighbourhood.† The village is situated on the brow of one

\* See Annales des Sciences Naturelles, tom. 4. 1825. p. 389.

† The published maps of Oxfordshire express the natural features very imperfectly; and, unfortunately for Geology, the Ordnance Survey has not yet been engraved. But on examining the large unpublished maps at the Ordnance drawing-room, I could see nothing indicating any departure from the general structure in that which represents the country around Stonesfield; though in several other cases, the features of the Ordnance maps correspond with the variations of the strata.

of the lateral vallies, that contribute streamlets to the Evenlode, a tortuous rivulet, the general course of which is from north-west to south-east; and the beds that supply the "slate" (as it is called), are, on an average, about fifty feet below the summits, and are excavated by numerous workings on both sides of the ravines; the agreement between the strata thus disclosed in the separate shafts affording the most satisfactory proof that can be imagined of their continuity. We descended by one of these shafts into a drift or gallery; and what we saw, the workmen assured us, might be taken as fairly representing the section of the pits in general.—



- |                                   |                                       |
|-----------------------------------|---------------------------------------|
| 1. Rubbly limestone; (Cornbrash.) | 5. "Rock". Oolite.                    |
| 2. Clay, with Terebratulites, &c. | 6. Blue clay.                         |
| 3. "Rock". Limestone.             | 7. "Rag." Oolitic limestone.          |
| 4. Blue clay.                     | 8. Sandy bed; containing the "Slate". |



The total depth of this shaft, to the bottom of the drift, or horizontal gallery where the slate is dug, was about sixty-eight feet; the drift itself being between five and six feet in height. About twenty-five feet of the lower beds (7.) consisted of fine-grained oolitic lime-stone, containing casts of spiral univalves and bivalves\* ; and the remainder, or upper part, (1. to 6.) of alternations of clay, with limestone, probably belonging to the corn-brash,—the beds of which at top are rubbly, and lower down oolitic. The lowest of these clay beds (6.) is of a greenish hue ; it effervesces slightly with acids, and falls to pieces in water like fullers' earth : and the upper bed of clay (2.) contains numerous plicated terebratulites, with pectens, and other marine fossils.†

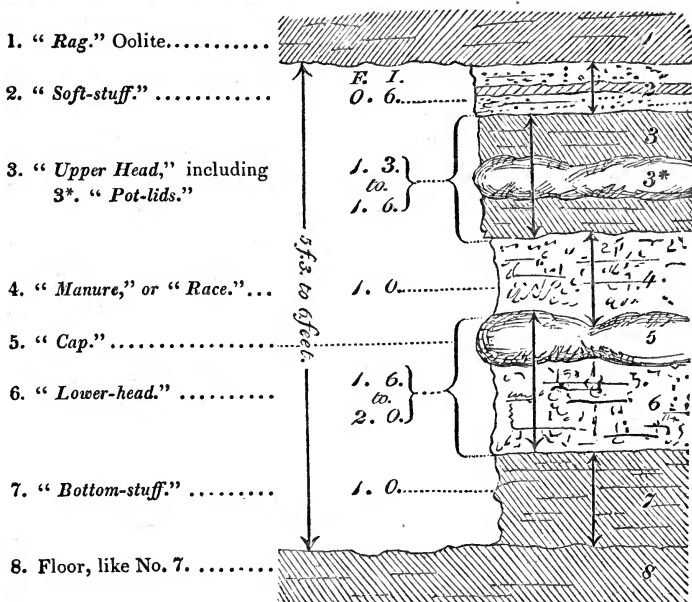
The stone which affords the "slate," occurs in irregular masses within a bed of sand (8.), and is analogous to those concretions of calcareous grit, or of sand agglutinated by carbonate of lime, that form a part of almost every group, from the beds above the chalk, down to the bottom of the lower oolite ;—and of which the quarries on the east of Cowes in the Isle of Wight, certain varieties of the Kentish rag, the grit of Hastings, and of Tilgate forest, the remarkable nodules of the coast near Boulogne, and the gritty limestone beneath the inferior oolite, may be cited as examples. In fact, wherever sand contains a large proportion of calcareous matter, concretions of this kind are to be expected ; and the presence of oolitic particles in this case is almost the only mineralogical distinction.

The subjoined sketch represents a section of the drift from whence the stone is extracted ; the names in *Italics* being those

\* Of the genera *Turritella*? *Venus*, *Astarte*? *Tellina*, *Pecten* (*vagans*?)

† *Terebratula obsoleta*. *Min. Conch. Tab. 83. fig. 7.* *Pecten fibrosus*. *Tab. 136. fig. 2.*

given to the beds by the workmen.—



1. The "Rag" which forms the roof, is a coarse soft calcareous stone, more or less oolitic.

2. The "Soft-stuff," occupying about six inches, consists of yellowish very sandy clay, including thin courses of fibrous transparent gypsum.

3. The "Upper head," from fifteen to eighteen inches thick, is composed of sand, of various consistency and fineness of grain, containing towards the lower part large flat or spheroidal concretions, of calcareous grit pervaded by oolitic particles,—which are most abundant in irregular seams parallel to the strata, and are rendered conspicuous by the darker greenish hue of the paste in which they are enveloped. These concretions, from a coarse resemblance, are called "Pot-lids"; and the rock which they consist of, with all the other useful stone of the pits, bears the common name of "Pendle."—It has in several places the character of a conglomerate; including smooth rounded pebbles of various sizes, cemented by oolite, and themselves also, composed principally of hard sparry oolitic stone, which differs very little from the cement except in form.

4. The "Manure", or "Race," consists of slaty friable sand-rock, effervescing strongly with acids, and including glittering particles appa-

rently of mica. The hue is yellowish gray, and the rifts are coated with yellowish carbonate of lime, crystallized in acute rhomboids.

5. and 6. The "Cap," and "Lower-head" together, are from eighteen inches to two feet in thickness; the upper portion having a concretionary form like that of the "Pot-lids." And the rock in both cases varies, from a very compact and fine grained grit, effervescing strongly with acids, and having in some places an almost sparry structure, to a stone of which the larger portion consists of oolitic particles. Nearly all the fossils that I have seen are contained in grit more or less oolitic, resembling that above described; and the greater number, including your specimen, appear to have been procured from these beds.†

7. The "Bottom-stuff," about twelve inches thick, is a coarser variety of stone, consisting of grit, with a large proportion of oolitic particles, and an admixture of effervescent sand-rock.

8. I saw no specimens of the floor of the gallery, but it was described by the workmen as of the same nature with No. 7. The workmen also stated that bones are sometimes found in the Rag above the galleries, No. 1, in No. 2, and No. 4: and they seem to occur occasionally in all the beds enumerated.

† The shells, in the specimen represented in Plate XI, are *Trigonia impressa*, *Terebratula obsoleta*, *Avicula ovata*, and apparently two species of *Gryphæa*:—and these seem to be among the most abundant in the Stonesfield slate. Mr. Sowerby's collection and my own contain the following species (including those last mentioned): many of which, it will be observed, are known to occur in other places, in the Cornbrash, or upper part of the great oolitic group.

UNIVALVES.

*Nerita*, two species; one banded; another banded and ribbed; both preserving their colour.  
*Turritella*?  
Another spiral univalve.

BIVALVES.

*Astarte*.  
*Avicula ovata*. Min. Conch. Tab. 512. f. 2.  
*Gryphæa*—two species; one of small size, another large..... T. 214. f. 1.  
*Lima rudis*. ..... T. 214. f. 1.  
*Modiola imbricata*..... T. 212. f. 1.  
——— *aliformis* ..... T. 259.  
———, a new species .. not figured.

(BIVALVES.)

*Mytilus*, a new species .. not figured.  
*Ostrea*—a plicated species.  
——— probably another species.  
*Pecten fibrosus* .. ..... T. 136. f. 2.  
——— *obscurus* ..... T. 205. f. 1.  
———, a new species.... not figured.  
*Pholadomya acuticostata*. T. 546.  
*Pinna* (from Mr. Parkinson's collection) ..... not figured  
*Plagiostoma*,—nearest to *cardiformis*. ..... T. 413. f. 3.  
*Terebratula obsoleta* .... T. 83. f. 7.  
——— *maxillata* ... T. 438. f. 4.  
*Trigonia impressa* (Sowerby) .... See Pl. XI.  
———Prevost, Ann. des Sc. Nat. IV. Pl. 18. f. 22. 23.

Several of the bones, remains of vegetables, and other fossils which occur at Stonesfield, have been enumerated in Dr. Buckland's memoir on the Megalosaurus:—Geol. Trans. 2d Ser. I. page 390, &c.,—and in Mr. Prevost's paper already referred to.

The best stone is that of the "*Pot-tids*", or concretions between the upper-head and the race; and the masses are frequently bluish within, but cream-coloured on the outside. The blocks after being raised from the pits, are spread out on the surface, and exposed to the effects of frost; which splits, or renders them easily divisible, into flags or "slate,"—the fissures being parallel to the general stratification of the country.

The doubts which Mr. Prevost has expressed on the relations of the strata at Tilgate forest in Sussex, have been adverted to by Mr. Mantell, who has mentioned the chief distinctions between that remarkable deposit and the Stonesfield beds.\* In fact, no point in the Geology of England is at present better determined, than the existence of a numerous and varied series of strata between those groups. The Tilgate grit it is true resembles that of Stonesfield, in its concretionary form and its connexion with sand; but it contains not a particle of oolite:—and grit of the same mineralogical character occurs not only in several other parts of the Hastings-sands, but occasionally throughout the Weald clay, thus pervading a series of strata decidedly different from the oolite in geological site: while the presence of freshwater shells at Tilgate, those of Stonesfield being marine, affords a Zoological character not less distinctive.

I remain, my dear SIR,

Very truly yours,

WM. HENRY FITTON.

*W. J. Broderip, Esq.*

\* "Remarks on the geological position of the Strata in Tilgate Forest, Sussex." Jameson's Edinb. Philos. Journ. April to Dec. 1826, p. 162.—See also a Notice by Mr. Mantell, Geol. Trans. 2d Series, I. p. 131.

ART. XLIV. *Descriptions of three new Species of Land Tortoises ;* by THOMAS BELL, Esq., F.L.S., F.G.S.

Ordo. TESTUDINATA. Merrem.

Fam. TESTUDINIDÆ. nobis.

Gen. TESTUDO. Auct.

ACTINODES. *T. scutis dorsalibus elevatis, nigris, luteo radiatis : scuto antico marginali impari nullo.*

Habitat in Africâ. Mus. nostr.

Tab. Suppl. XXIII.

*Description.* Head large, thick, black with yellow spots. Fore feet furnished anteriorly with numerous, large, black and yellow scales. The thighs with a few similar ones, but larger and of a conical form. Tail short, tuberculated. Shell elevated, ovate, the margin anteriorly notched, posteriorly denticulated. The whole of the scuta sulcated, black with regular yellow radiations, and with large yellow areolæ. The dorsal scuta, especially the vertebral, elevated, somewhat conical, and slightly turned backwards. Marginal scuta xxiii, viz.: eleven pairs, and a posterior single one. The nine posterior projecting and acuminated, thus forming a deeply serrated outline. The last marginal plate very broad, nearly vertical, but slightly incurved. Sternum yellow with distinct black radiations passing from the areola of each plate to its circumference; anteriorly bifid, posteriorly with a deep lunate emargination.

Dimensions of the shell.

	in.	lin.
Length . . . . .	8	: 5
Breadth . . . . .	5	: 3
Height . . . . .	5	: 0
Length of the sternum . . . . .	7	: 5
Circumference . . . . .	16	: 0

TENTORIA. *T. scutis dorsalibus conicis, acutis, nigris, luteo radiatis; scuto marginuli antico impari.*

Habitat in Africâ? Mus. nostr.

Tab. Suppl. XXIV.

*Description.* Shell subglobose. Scuta sulcated, black, radiated with yellow lines which encrease in breadth towards the circumference; areolæ extremely small, yellow. Dorsal scuta conical, much elevated, acuminated at the apex. Marginal scuta xxiv, viz.: eleven pairs, and an anterior and posterior single one. The anterior extremely small, short, and turned up at the point: the first pair very thick, projecting, bent downwards at the points: the lateral thick, convex, and solid, with the points all turned backwards: the posterior single plate projecting and angular. Sternum narrowed behind, with a deep acute emargination; deep uniform brown in the middle through the whole length, and pure light yellow at the sides. In the only specimen which I possess, the anterior lobe of the sternum is wanting.

Dimensions of the shell.

	in.	lin.
Length . . . .	4	3
Breadth . . . .	3	3
Height : . . . .	2	6
Circumference . . . .	9	4

PARDALIS. *T. testâ flavescente, nigro maculatâ; scutorum costalium areolis prope marginem superiorem positis; scuto marginali antico impari nullo.*

Habitat. in Promont. Bonæ Spei. Mus. nostr.

Tab. Suppl. XXV.

*Description.* Head elongate, of an uniform dull brown colour, which also pervades the neck, feet, and tail, but with occasional shades of dirty yellow. Neck very long. Feet robust, furnished with strong conical and triangular scales, which protect the anterior and inferior parts of the fore feet, and the posterior and

inferiour parts of the hinder ones ; two of these scales, particularly strong and thick, are placed on the back part of each thigh near the tail. Claws long and thick. Tail short, tapering, and tuberculated. Shell very deep, and formed almost exactly like that of *T. Indica*. Scuta flat, sulcated, of a dirty light yellow colour, with numerous large irregular black spots, as if splashed, but assuming in a slight degree a radiating direction. The areolæ of the vertebral scuta a little elevated; those of the costal scuta placed very near their upper margin towards their junction with the vertebral; which character constitutes almost the only distinction of importance between this species and *T. Indica*, excepting the colour. Marginal scuta xxiii, very deep, the anterior and posterior ones turned slightly outwards approaching a horizontal direction. The posterior single one nearly vertical. Sternum with a small emargination before, and a large lunate one for the tail. The colour a dirty yellow, with black radiating spots towards the circumference of each plate.

The specimen from which this description is given is still living, and has been in my possession since the commencement of the Summer, during which time it has had the range of a small orchard, feeding heartily on grass, which it plucked with a movement similar to that of a goose. The neck is so extensile as to permit the head to be raised above the level of the top of the back, and thus to enable the animal to look around on all sides by merely turning the head. It is the largest known species of land Tortoise excepting *T. Indica*.

Dimensions of the shell.

	ft.	in.	lin
Direct length . . . . .	1	: 5	: 0
Length following the curvature . . . . .	2	: 0	: 0
Breadth . . . . .	0	: 11	: 0
Height . . . . .	0	: 8	: 5
Length of the sternum . . . . .	1	: 3	: 0
Circumference . . . . .	2	: 8	: 0

ART. XLV. *Extracts from a letter addressed by Capt. PHILIP PARKER KING, R.N., F.R.S. and L.S., to N. A. VIGORS, Esq., on the Animals of the Straits of Magellan.*

[THE information contained in the following extracts from a communication lately received from Capt. King is of so much interest, that I do not hesitate to publish it in the form in which it has reached me. It was Capt. King's wish that the descriptions of the species which he thinks new should be extracted from his list and published in this Journal. But I consider that the whole list, although drawn up in a hasty manner, merely for the purposes of reference, and without any view to immediate publication, is of so much value as to authorize the insertion of it nearly entire. One of the chief advantages of a Journal like ours is that it admits of the speedy publication of such information as the present, which may ultimately be moulded into a more scientifick form, as leisure and opportunity permit. We may thus hope to see the following list encreased, and scientifically arranged by Capt. King; and, I trust, at no distant period. At present it speaks highly of the science and activity of that accomplished and enterprizing officer.—N. A. V.]

---

Adventure, Rio de Janeiro, July 8, 1827.

———— In about three weeks we shall sail from this on our second trip to the southward, which I have every reason to think will be more productive and comprize more variety in Natural History than the former. The cases at present dispatched contain the whole of the collections which I made during that trip. The Quadrapeds, Insects, and Birds, I have directed to you; the Shells to Mr. Stokes, for himself and Mr. Broderip to look over; the Geology goes to Dr. Fitton; and the Plants of course to Mr. Brown.

The *Mammalia* are very few, scarcely worth mentioning. The only specimens are, No. 1, a *Fox*, very common in the Straits.



The specimen sent home was shot at Port Gregory at the entrance. It appears to me to be the *Canis cinereo-argentatus* of Erxleben, the *Renard tricolor* of M. Desmarest. (*Mamm. sp.* 310).

No. 2 is an *Armadillo*, (*Dasypus minutus*, Desm. sp. 588,) from Port St. Elena; found in great abundance.

Our sportsmen took a specimen of the *Hare of Patagonia*, (*Dasyprocta Patachonica*, Ill., *Cavia Patachonica*, Shaw,) but being very hungry, and more mindful of their appetite than of the interests of science, they ate it; and thus deprived me of the opportunity of examining the teeth and solving the doubt expressed by M. Desmarest (*Mamm. sp.* 574, p. 359, Note,) whether the animal is a true *Dasyprocta* or not.

I shall say nothing of the *Insects* which I sent home. They do not exceed fifty species. They are in fact very scarce to the southward. Nature seems to have granted a monopoly of these creatures to this beautiful part of the world. Such as my collection is, however, I send it to you, lest you should think me entirely neglectful of a branch of Zoology to which I promised you, when I was leaving England, to pay some attention. In my next trip I hope to be more successful.

There are about eighty specimens of Birds. I have numbered them by specimens, not by species; and I have made a few observations or memoranda on each. Many of the species appear to me to be new; of some of these I have given short descriptions, which I should feel much gratified if you would extract and publish in an early number of the *Zoological Journal*; that is, if they appear to you to be really new. On this point I cannot myself speak with any certainty, as I have but few books, and no specimens, to refer to. All that I can say is that I can find no descriptions that accord with my species either in the last edition of Dr. Latham's works, or in the *Encyclopedie Methodique*. I have endeavoured to arrange my birds according to the mode which you usually follow, and I hope without many mistakes.

#### 1. A *Caraçara*.—*Falco Braziliensis* of Latham.\*

\* *Polyborus Brasiliensis*, Auct. *Pol. vulgaris*, Vieill., Gal. des Ois. pl. vii. Ed.

2. 3. *Caraçaras* also.—These appear to me to be young birds of a species which you showed me in your collection before I left England, and which has been figured by M. Spix, I forget under what name.\*

4. A small Eagle, which I consider new.—Its characters are as follows.

HALIÆTUS ERYTHRONOTUS.

*Hal. capite alisque fusco-griseis; dorso scapularibusque rufis, corpore caudâque subtus albis, fasciis fuscis gracilibus leviter notatis, hâc fasciâ latâ prope apicem nigrâ.*

The head of this beautiful species is a dark fuscous grey, the feathers being white at their base, and slightly marked in the middle with narrow fuscous *stris*. The wings are of the same colour as the head, the quills being darker; the wing coverts and secondary quill feathers are slightly fasciated with fuscous; the inner webs of the primaries are also fasciated at the base, while some of the external ones are white at the same place. The under wing coverts are white, marked with slender *fasciæ*. The chin, throat, and breast are pure white; the *abdomen* white fasciated with faint slender fuscous bars. The nape, back, and scapulars are of a fine rufous colour, some of the feathers of the nape and the lower scapulars being slightly marked with dark *stris*: the rufous colour extends in front to the shoulders, and appears in spots partially under the wing on the sides of the *abdomen*. The *uropygium* is marked with a few fuscous blotches above, and transverse lines near the tail. The tail is white, faintly barred with slender *fasciæ* above, and still more faintly beneath, and has a black *fascia*, near an inch and a quarter broad, situated near the *apex*. The bill is black at the *apex*, yellowish towards the base.

\* The specimens, I agree with Capt. King, seem to be the young of *Milvago ochrocephala* of Spix, (Nov. Sp. Av. Bras. p. 5,) figured also by Sir W. Jardine and Mr. Selby in the 2d plate of their "Illustrations of Ornithology;" the rudiments of the various markings of the adult birds of that species being discernible in them. The difference between them accords generally with that which distinguishes the young bird from the adult almost universally among the *Falconidæ*.—Ed.

The legs are yellowish, the nails black. The total length of the bird from the *apex* of the bill to the extremity of the tail is 2 feet; of the bill from the *rixtus* to the *apex* 2 inches; from the cere 1 inch; of the wing from the carpal joint to the end of the third\* quill feather, 18 inches; of the tail  $10\frac{1}{2}$  inches; of the *tarsus* 3 inches.

5. 6. Male and female of the *Little Falcon* of Latham, *Falco Sparverius*, Linn.

7. 8. I consider these birds as the young of the *Peregrine Falcon*. At least they have all the colour and markings, as far as I can recollect, that I have observed in some of our English specimens of the young of this species. If they should prove to belong to the *Falco peregrinus*, the species will be found to have a very extensive range. Besides inhabiting the Old World, they are met with in North America, (Wilson, Am. Orn. vol. IX. p. 120,) and, as you well know, in New Holland.

9. A species of *Harrier*.—It extremely resembles both our own species in general characters, but differs much in the markings. I consider it new, and shall describe it.†

*Circ. cineraceus uropygio corporeque subtus albis; hoc fasciis frequentibus rufis notato.*

The body above is ash-coloured; some of the scapulars and secondary quill feathers being marked with fuscous at the ends: the primary quill feathers are dark fuscous, and have a white margin on their inner webs at the base. The under wing coverts are white, which colour, joining the white margin on the inner webs of the quill feathers, extends over half of the wing when viewed from beneath, the fuscous colour prevailing over the other half. The *uropygium* is white: the breast, abdomen, thigh coverts, and *crissum*, also white, are barred by strongly marked rufous *fasciæ*.

\* The fourth quill feather on each wing is short, not having grown to its proper length.—*Ed.*

† I have little doubt that this bird is the *Falco histrionicus* of Quoy and Gaimard (Voy. aut. du Monde, pl. 15), the figure and description of which Capt. King had not an opportunity of seeing before he left England. I have suppressed the name which he has given to his specimen, but have retained the description. The species will be the *Circus histrionicus* of our modern systems.—*Ed.*

The two middle tail feathers are dark ash colour, marked with six nearly obsolete bands, that nearest the *apex* being the broadest and the most conspicuous: beneath these feathers are paler, and the bands more strongly marked. The remaining tail feathers are cinereous on the outer web, and white on the inner, with five strongly marked black bars, which are fainter on the outer than on the inner web, the lowest being the broadest: underneath these feathers are white and the bars deep black, except on the outer feathers, where they are scarcely discernible. The bill is black; the feet yellow, with black claws. The length from the *apex* of the bill to that of the tail is 18 inches; bill, 1 inch; wing from the carpal joint to the end of the third quill feather,  $13\frac{1}{2}$ ; tail, 9; *tarsus*,  $2\frac{1}{2}$ .

All the above species of *Falconidæ* were collected at Port Famine.

10. A very beautiful *Owl* from Port Famine, which I do not see described. Its rufous legs are very conspicuous, and give it a decided character that I have not found noticed in any recorded species.

#### STRIX RUFIPES.

*Str. saturatè brunnea, albido fulvoque maculata fasciataque, femorum tarsorumque plumis rufis.*

The face of this bird nearest the bill is white, the sides fasciated with brown and whitish: the feathers at the extremity of the disk being deeply marked with brown and having white spots on their *apices* exhibit a regular brown semicircle with a spotted margin. The top of the head, nape of the neck, wing coverts, scapulars, and back are sparingly marked with fulvous-white spots and *fasciæ*. The interscapular feathers are barred with conspicuous *fasciæ* of the same colour. The quill feathers are marked at their bases with broad fulvous spots on the outer webs, and similar *fasciæ* on the inner, the rest of the feather being obscurely fasciated; underneath they are paler and similarly marked. The under wing coverts are barred with white and brown. The feathers of the *abdomen* are marked by *fasciæ* of white and brown of nearly equal breadth. The tail feathers have eight *fasciæ* nearly half

an inch apart from each other of a fulvous white: beneath they are paler but correspond in their markings. The thigh coverts are rufous: the *tarsi* are covered with rufous downy feathers, extending to the toes, which are hairy. The bill is light coloured. The nails are black. The total length is  $15\frac{1}{2}$  inches; that of the bill 1 inch; of the wing from the *carpus* to the end of the fourth quill feather, 11 inches; of the tail,  $7\frac{1}{2}$ ; of the *tarsi*,  $2\frac{3}{8}$ .

11. 12. 13. Three beautiful little *Owls*, which I also think new.—I am aware that several small species have been lately described belonging to South America, but none of them agree with these birds. The markings on the tail are the most distinguishing characters. They are from Port Famine.

#### STRIX NANA.

*Str. fusco-brunnea, fronte nuchâ ulisque albo-notatis, gulâ albâ, caudâ fasciis frequentibus rufis notatâ.*

The face and throat are white; the feathers of the forehead are slightly marked, those of the nape, breast, and lower part of the *abdomen* more strongly marked, with white *striæ*. The upper wing coverts and scapulars are partially spotted with white. The quill feathers have both webs spotted with white at the margin, the spots on the outer webs being mixed with fulvous: they are paler beneath. The under wing coverts are white. The tail feathers have about nine rufous *fasciæ*, and an equal number of brown of the same breadth; the last brown *fascia* nearest the *apex* being the broadest and tipped with white. The *tarsi* are covered with rufous-white downy feathers as far as to the toes, which are hairy. The bill is pale, the *ungues* black. The length from the tip of the bill to the end of the tail is  $5\frac{4}{5}$  inches, of the bill,  $\frac{1}{2}$  inch; of the wing from the carpal joint to the end of the fourth quill feather,  $3\frac{1}{4}$  inches; of the tail,  $2\frac{1}{2}$ ; of the *tarsi*,  $\frac{7}{8}$ .

14. 15. 16. *Swallows* from Port Famine.—There are three species among these birds, which seem very like our three British species, *Hir. rustica, urbica, and riparia*. I can speak however only from recollection, and must wait for an opportunity of comparison before I can decide the point.

17. A beautiful long-tailed *Flycatcher* from Maldonado.—I consider this to be the *Musc. psalura*, or the *Gobe-mouche jेतupa* of M. Temminck, (Pl. col. 286.) The colours in my bird are much darker than those in M. Temminck's plate, being black where his are gray.\*

18. A Bird from Port Famine which appears to me to be new, and to belong to a group not as yet characterized.—Were I to judge from a single specimen I should say it was one of those numerous intermediate forms that unite the *Thrushes* and *Warblers*. I shall say no more on the bird, which I think you will agree with me is of much interest, until I have more extensive means of comparison and reference.

19. 20. These birds I have little doubt belong to Latham's *Thorn-tailed Warbler*, (Gen. Hist. vol. vii. p. 147. No. 191. pl. cvii.), the *Sylvia spinicauda* of the "Index Ornithologicus," although his figure of the species is much more highly coloured than the specimens I have met with.

21. A *Sylvia* with which I am unacquainted.—It is so decidedly marked that I venture on a description.

SYLVIA DORSALIS.

*Sylv. nigra, dorso scapularibusque rufis, remigibus rectricibusque fuscis.*

The bill and legs are black. The length from the end of the bill to that of the tail is  $4\frac{1}{2}$  inches.

22. This is another species of the *Sylviadae*; but from its short and rounded wings, lengthened *tarsi*, and short tail, it appears very remote from the true *Sylvia*. I should refer it to *Saxicola*, or some neighbouring genus. Perhaps it may come in with *Brachypteryx* or *Prinia* of our friend Dr. Horsfield. I do not

\* The species is well coloured in M. Vieillot's plate, (Gal. des Ois. Pl. 131.) where he gives the name of *Musc. risora* to the bird. I question whether this is not the earlier name, as M. Vieillot does not refer to M. Temminck's plate, which he does in other instances where such had been previously published.—*Ed.*

find any description of the species in my books, I shall therefore give the following characters.

SYLVIA OBSCURA.

*Sylv. corpore unicolore fusco-nigro, alis brevibus rotundatis, caudâ brevi, pedibus elongatis fortibus pallidis.*

The length of this bird from the apex of the bill to that of the tail is  $4\frac{1}{4}$  inches; of the wing from the carpal joint to the end of the fourth quill feather,  $1\frac{7}{8}$ ; of the tail,  $1\frac{1}{4}$ ; of the tarsi,  $\frac{3}{4}$ .

23. I consider this bird as the species which M. Vieillot has figured under the name of *Troglodytes furva*, (Galerie des Oiseaux, pl. 167.) It is the *Motacilla furva* of Gmelin, (Syst. Nat. 1. p. 994. no. 168.)

24. A bird nearly allied to the last.—It is a young bird, brownish with longitudinal fuscous striæ on the head, back, and wings. The tail is barred like the preceding, which would incline me to think that it belongs to the same species, were not the bill somewhat stronger at the base. I shall endeavour to procure more of them, and ascertain the species.

25. A species of *Fringilla*, or rather, I suspect, of *Emberiza*; the bill being injured I cannot decide to which group it belongs. It appears to me to be undescribed; but I do not wish to say more respecting it until I possess better materials for description.

26. A *Fringilla*.—This I think is probably the *Fr. australis*, or the *rusty collared Finch* of Dr. Latham, (Ind. Orn. p. 466. No. 112. Gen. Hist., Vol. vi., p. 128., No. 111.); although his description is too short to decide the species with certainty. The rusty coloured collar round the neck is a strong character, and inclines me to think that both birds are of the same species.

The above eight specimens were procured at Port Famine.

27. A female specimen of the *Sturnus militaris*, Linn.;—not uncommon in the Straits.

28. This is one of those black species which are so numerous and so ill defined among the American *Sturnidæ*. I cannot ven-

ture to refer it to any described species, much less describe it as new. From the strength and straightness of the bill, I believe it to belong to your group *Leistes*.

29. 30. 31. *Emerald Parrot, Psittacus smaragdinus*, Gmel.—I take it for granted that my birds are of the same species as that brought home by M. Bougainville, and described under the above name, although they do not exactly accord with the description of the species given in the “*Encyclopedie Methodique*,” No. 1398. They are not “*splendidé virides*,” nor is the *uropygium* red. The French writers remark on the singularity of *Parrots* being found in high latitudes; and in the *Nat. Hist. of the Encyc. Method.*, vol. ii. p. 321, the fact of M. Bougainville having brought a specimen from the Strait is much doubted. Dr. Latham also has his doubts on the subject.—Here however is fact against theory.—Nor is this the only instance in point. *Parrots*, as you are well aware, are brought from Macquarrie Island, which is in latitude  $54\frac{3}{4}$  South, while the spot where I procured *P. smaragdinus* is in  $53\frac{1}{2}$  only. The species is very numerous, but specimens are difficult to be procured in consequence of the thickness of the under-wood, which makes it no easy task to find them after they have been shot. The species, as you will immediately perceive, belongs to the group of *Perruche-Aras*, or your genus *Psittacara*.

32—36 inclusive.—A species of *Woodpecker* from Port Famine, that I think undescribed. There are three males and two females in the collection.

#### PICUS MAGELLANICUS.

*Pic. niger, capite cristato colloque coccineis, remigibus albo notatis.*

Fæm. *Capite cristato nigro, fronte mentoque coccineis.*

The male has the whole of the head, crest, and part of the neck of a bright scarlet colour; the base of the feathers being black. The female has the same parts black, the scarlet colour being restricted to a narrow space round the bill, including the front and the fore part of the chin: the crest feathers are generally longer than those of the male. The rest of the plumage in both



sexes is nearly alike. The quill feathers are black with their internal web margined more or less at the base with white; the mark on the first feather being but slight, somewhat more lengthened on the second, and gradually extending over the rest, until it covers the whole of the internal web of the last secondary quill feather, in some instances indeed encroaching upon the adjoining parts of the external web. When the wing is viewed from beneath, this mark exhibits a broad white *fascia*: when the bird is viewed from above, it forms a longitudinal *stria* as far as the internal webs of the secondary quill feathers are visible. The under wing coverts are white, with some black feathers immediately adjoining the margin. The bill and legs are black. The *irides* are yellow. The length of the bird from the tip of the bill to the extremity of the tail is 17 inches; of the bill,  $2\frac{1}{2}$ ; of the wing from the carpal joint to the extremity of the fourth quill feather,  $8\frac{3}{8}$ ; of the tail,  $7\frac{1}{2}$ ; of the *tarsi*,  $1\frac{1}{8}$ ; of the external hind toe, the nail included, 2.

This *Woodpecker* in size and general appearance resembles the *Ivory-billed Woodpecker* of North America, (*Picus principalis*, Linn.); but the bill is black instead of being white as in that species; the scarlet colour extends in the male over the whole head, instead of being limited to the crest, and the white markings appear only on the internal webs of the quill feathers, while in *P. principalis* they form a broad *fascia* over the secondary quill feathers, and also appear on the back and hinder part of the neck.

37. A species of *Humming Bird* from Port Gallant.—I shall not remark upon the high latitude at which this specimen was found after what I have said on the *Parrots*, and particularly when I recollect how far north many species of the family are met with on this Continent. The bird is not very remarkable in its colours. The character of the enlarged shaft, which seems to belong more or less to the family, is much developed in it. The tail feathers are also very strikingly acuminate. I shall say nothing of the species until I have an opportunity of comparing my specimen with others.

## NOTE.

I cannot omit this opportunity of paying a deserved compliment to our zealous Navigator in inscribing this species to him. The specimen is that of a young bird. This fact I ascertained by baring some of the feathers from the head, underneath which a beautiful covering of bright ruby feathers was beginning to make its appearance. It was in consequence of the concealment of these feathers that Capt. King pronounced this species to be undistinguished in its colours. The adult bird is to be found in the splendid collection of Mr. Leadbeater, and exhibits its identity with our specimen by the acuminate shape of the tail feathers. The species belongs to the genus *Mellisuga* of M. Brisson, or the straight-billed division of the *Trochilidæ*.

## MELLISUGA KINGII.

*Mell. supra metallicè viridis, infra alba viridi variegata, vertice splendide rubeo, rectricibus acuminatis.*—N. A. V.

[To be concluded in our next Number.]

ART. XLVI. *Sketches in Ornithology, &c. &c.* By N. A. VIGORS, Esq., M.A., F.R.S. & L.S., Secretary of the Zoological Society, &c.

[Continued from p. 246.]

## ON SOME SPECIES OF BIRDS FROM CUBA.

HAVING lately received from my friend W. Sharp MacLeay, Esq., a number of bird-skins, which had been collected by him in the neighbourhood of the Havana, I do not think I can more strongly evince my sense of his kindness in transmitting them to me, and of the zeal with which he labours to advance every department of science, than by giving some notice of them in this Journal. The greater number of the species are well known, and have long since been characterized as inhabitants of the New World. Many of them, also, belonging to the Ornithology of the United States, are rendered as familiar to us by the writings of Wilson, and the scientific illustrations of his able successor the Prince of Musignano, as the birds of our European Continent. Still however they derive interest from their immediate locality. When we can

obtain authentick information respecting the range to which species extend, either as indigenous to different countries or visitors of them during their periodical migrations, we encrease the number of those facts on which we are enabled to found some of the higher speculations of science.

A few of these birds appear to be undescribed. These I shall characterize; but with that expression of doubt of their being actually described for the first time, which ought ever to attend undertakings like the present. There are so many species characterized by the earlier voyagers, without any reference to specimens or figures, and in terms too vague for our deciding on them with certainty; so many again described by our contemporaries in scattered publications and in channels through which, from their obscurity or remoteness it is difficult to trace them, that it would be the height of presumption to assert that any species, which may appear new to us, has escaped the observation of preceding writers. Were we to wait until we had ascertained this point, we should run the chance of never giving a description: and all the advantages would be lost which the naturalist derives from the publication of authentick facts and well-ascertained species, the only legitimate foundation for his more comprehensive and enlightened views.

On this point I cannot avoid expressing my opinion, that we have hitherto exhibited more caution than zeal for science, in delaying to describe the immense hoard of apparently new subjects which crowd our collections, from the fear of committing an error in nomenclature. We attach in fact too much importance to these inferiour duties of science; and are too chary of the reputation which we vainly imagine is attached to success or failure in them. Under such false impressions we become as apprehensive of creating what is called a nominal species, or of coining an additional synonym, as of misrepresenting a fact, or committing a solecism in the train of reasoning. We forget that in the description of species, and the analysis of groups, we act at best but as the pioneers of science: and in the "obscure diligence" by which we work out such mechanical details, we deserve the credit merely of executing those subordinate duties, which may ultimately en-

able ourselves or others, from judiciously and comprehensively combining the results of our labours, to confer true interest upon our pursuits. Should we commit an error in these petty, but still necessary details, we can repair it as soon as it has been detected. No injury accrues to science from the error, no discredit to ourselves from the acknowledgment of it. And, when we confine our descriptions to such subjects as may be easily referred to and examined, we encrease the legitimate materials of science; while at the same time we diminish the number of those truly nominal species, which, characterized from unauthentick drawings, or still more vague hearsay, swell the catalogues of our numerous compilers, and may be said with justice to "live in description" only.

The following forty-five species occur among these birds from Cuba. There are a few other specimens in the collection, which appear to be those of young birds, and some also which have suffered injury in their passage, and are not in a fit state for comparison or description. I have made some observations on all these subjects to Mr. MacLeay, and hope shortly to have more authentick information respecting them, as well as an addition to their number. I shall then continue the list now enumerated.

#### 1. POLYBORUS BRASILIENSIS.

*Polyborus vulgaris.* *Vieill., Gal. des Ois. pl. vii.*

*Milvus Brasiliensis.* *Ray, Syn. Meth. Av. p. 17.*

*Falco Brasiliensis.* *Gmel., I. p. 262. no. 64.*

Brazilian Kite, called Caraçara. *Willughby, Ornith. p. 75. t. 9. Lath., Gen. Hist. I. p. 274. no. 218.*

This species seems to be very widely dispersed over the New World. It is said to be common in Brazil. Specimens are in the collection of the Zoological Society, brought by Mr. Bullock from Mexico.\*

#### 2. ACCIPITER FRINGILLOIDES.

*Acc. supra cinereo-griseus, subtus albus brunnescenti-fusco graciliter fasciatus, reatricibus fasciis quinque saturaté fuscis.*

\* It has also been found in the Straits of Magellan. See this Vol. p. 423.

*Frontis* plumæ brunnescentes, fusco striatæ; *occipitis nuchæque* parcè albo notatæ; *gula genarumque* albæ, brunnescenti-fusco graciliter striatæ; *pectoris abdominisque* albæ, brunnescenti-fusco fasciatæ; *femorum crissique* albæ. *Remiges* cinereo-brunnæ; primarum pogoniis internis ad basin, secundariarum per totam ferè longitudinem, albo marginatis, fasciis septem sublunaribus fuscis notatis; subtus pallidiores. *Tectrices* superiores apice leviter brunnescenti notatæ; inferiores albæ. *Rectrices* ad apicem pallidæ; intermediæ omnes fasciis quinque fuscis notatæ; duarum externarum pogoniis externis sine notâ, internis tribus fasciis fuscis quatuorquè maculis, duas fascias interruptas fingentibus, notatis; subtus albescentes, ut supernè fusco-notatæ. *Rostrum unguisque nigri. Pedes flavi.* Longitudo corporis,  $10\frac{1}{2}$ ; rostri,  $\frac{1}{2}$ ; alæ a carpo ad remigem  $4^{\text{line}}$ , 5; caudæ,  $5\frac{1}{2}$ ; tarsi,  $2\frac{1}{8}$ .

I find no description in any authour which exactly corresponds with this delicate *Sparrow Hawk*. There are several small species however of the *Falconidæ*, described by Dr. Latham and others, to which the bird before us may probably belong, the difference which it exhibits being perhaps attributable to age or sex. It would be dangerous nevertheless to refer the bird to any one of these, as besides the uncertainty respecting the species, we can not be confident that we should refer it even to the same genus; no clue being given in the descriptions to which I allude, by which we can determine whether the birds described are *Hawks* or *Falcons*. Our bird is a genuine *Accipiter*, and typical in the group. The description of *Falco minutus*, Linn.,\* comes the nearest to it; this bird, however, is alleged to have been found in Malta, and as it has been passed over without notice by M. Temminck in his account of the birds of Europe, I conclude it to be a nominal species, perhaps a variety of the common *Sparrow Hawk*.

3. **FALCO SPARVERIUS.** Linn., *Syst. Nat. I. p. 128. no. 20.*

Little Falcon, Lath., *Gen. Hist. I. p. 290, no. 238.*

Emerillon de St. Domingue. *Pl. Enl. 665. ♂.*

Emerillon de Cayenne. *Ib. 444. ♀.*

American Sparrow-Hawk. Wilson, *Am. Orn. II. p. 117.*

*pl. 16. f. 1. ♀.—IV. p. 57. pl. 32. f. 2. ♂.*

\* Lath. Ind. Orn. p. 50. No. 121. *Accipiter minor.* Briss. Tom. I. p. 315. t. 30. f. 1.

There are specimens of the male and female of this species in the collection; at least they agree in so many essential points with the description of the type of the species, although they differ in others, that I presume they must belong to it. The species has indeed been observed to be extremely subject to variation. The chief difference in our birds is in the size, which is less than that of the typical birds, and in the *fasciæ* of the wings and tail, which are less frequent, and of a different form. Our female is also much more rufous throughout. Wilson, in his *American Ornithology*,\* when describing *F. Sparverius*, refers to a smaller *Falcon* found in the Southern States of North America, which is nearly allied to that species, but at the same time distinct. I suspect that the bird to which he alludes may be the following species, which, although it has arrived in company with the birds now described, I consider too strongly distinguished not to demand a separate description.

#### 4. FALCO SPARVERIOIDES.

*F. capite alisque cinereo-griseis, collo abdomine dorso caudâque badiis, hæc prope apicem nigro fasciatâ.*

Fæmina? Aut mas junior? *Dorso cinereo-griseo.*

*Frontis plumæ albescentes; capitis fusco in medio gracillimè striatæ. Gula genæque albæ, his nuchâque maculis nigris notatis. Dorsi femorumque plumæ parcè nigro maculatæ, hæc pallidiores. Scapularium tetricumque superiorum plumæ in medio nigro gracilliter striatæ. Remigum pogonia externa nigra, interna griseocentia; trium externarum fusco frequenter et conspicuè fasciata; reliquarum indistinctè notata, aliquibus secundariarum exceptis, quæ sunt pallidiora et fusco magis saturato fasciata: subtus, pogonia externa pallidè fusca, interna albescenti-grisea, fasciis trium externarum pallidis at conspicuis, reliquarum ferè obsoletis. Tetricæ inferiores albæ, nigro fortiter et frequentissimè notatæ. Rectrices supra saturatè badiæ, fasciâ latâ nigrâ prope apicem notatæ, apice ipso griseo; omnes duodecim concolores et similiter notatæ. Rostrum ad basin plumbeum, apice nigro. Pedes flavi,*

\* Vol. II. p. 117.

*unguibus nigris.* Longitudo corporis, 10; rostri,  $\frac{1}{2}$ ; alæ a carpo ad remigem <sup>2</sup>dam, 7; caudæ, 5; tarsi,  $1\frac{7}{10}$ .

In this bird the following distinguishing marks may be noticed as separating it from the *Falco Sparverius*. The head \* has not the bay or rufous spot on the *vertex*; while the breast, *abdomen*, and under parts are strongly and entirely rufous. The internal webs of the quill feathers are grey instead of white, and faintly, not strongly, fasciated with fuscous: the *fasciæ* also differ in form, being uniform throughout, while in *F. Sparverius* they appear dentated, particularly towards the *apex*: the undersides also exhibit a similar difference, the *fasciæ* being indistinct, and the whole surface nearly of a uniform grey. The under wing coverts differ materially from those of *F. Sparverius*, being strongly marked with black, which colour predominates over the white; in the other species the white prevails with but a few black marks. The tail in our bird has a narrow greyish *fascia* at the *apex*; the *F. Sparverius* has a broad white one: all the twelve tail feathers in our bird are uniform in colour and in markings, while in the other species the two external feathers have a white external web, and an internal web with a white margin at the *apex* extending nearly an inch, and marked with two black spots. Our species appears somewhat smaller than the generality of those birds which are represented as belonging to the true *F. Sparverius*.

One of the specimens in the collection has an ash-coloured back, but somewhat marked with rufous. It may be a female or a young male;—the latter more probably,—as the females of all the conterminous species have the tail marked with numerous bars, while in the specimen to which I allude that member is uniformly rufous.

Dr. Latham describes an American species in the new edition of his Synopsis under the name of *Abbottian Falcon*, which seems nearly allied to the present bird. The description however dif-

\* The specimens from which I have drawn the foregoing description are somewhat injured about the neck. That part evidently shows some black markings similar to those in *F. Sparverius*, but from the state of the skins I cannot determine their number or position so as to compare this character in the two birds.

fers in many material particulars from the foregoing. It is curious that M. Brisson's two species, his *Æsalon Carolinensis*, and *Æs. Dominicanensis*, which have been united into one species by later writers, have respectively some of the distinguishing characters of *F. Sparveroides*, the former having for instance the same characters of the tail, the latter those of the head. No naturalist possessed more tact in the discrimination of species than M. Brisson, and I have much doubt in the present case whether he was not much more near the truth in separating the two species, than his followers were in uniting them. On the whole I have some reason to think, even from the scanty materials at present within our reach, that at least three distinct species have been united under the name of *F. Sparverius*. The naturalists now so zealous in investigating the ornithology of America will no doubt solve these points.

5. STRIX FLAMMEA. *Linn.*, I. p. 133. no. 8.

White Owl. *Lath.*, *Gen. Hist.* I. p. 355. no. 56.

L'Effraie ou la Fresaye. *Pl. Enl.* 440.

This species, so familiar to us in Europe, is described \* by Wilson as an inhabitant of the United States. The specimen from Cuba differs in no material respect from our own. The colour is somewhat darker, particularly on the margin of the disk, and partial variations appear in the brownish spots on the nape, and in other places. Our European specimens however vary in all these respects. The tail is decidedly even. I cannot therefore refer the birds now before me to M. Temminck's species, *Strix furcata*, [Pl. Col. 432] which has been described as belonging to Cuba, and in which the chief distinction from *Str. flammea* consists in the tail being forked.

6. STRIX OCCIPITALIS. *Temm.*

Chouette occipitale. *Id.*, *Pl. Col.* 34.

\* *Am. Orn.* Vol. VI. p. 67.



7. *ALCEDO ALCYON.* *Linn.*, p. 180. no. 7.

Belted Kingfisher. *Penn.*, *Arct. Zool.* II. 169. *Lath.*,  
*Gen. Hist.* IV. p. 50. no. 47. *Wils.*, *Am. Orn.* III.  
59. pl. 23. f. 1. *Prince of Musign.*, *Gen. N. Am.*  
*Birds.* sp. 47.

Martin pêcheur huppée de la Louisiane. *Pl. Enl.* 715.

8. *TODUS VIRIDIS.* *Linn.*, I. p. 178. no. 1.

Green Tody. *Lath.*, *Gen. Hist.* IV. p. 81. no. 1.

Le Todier de St. Domingue. *Pl. Enl.* 585.

Of the manners and internal anatomy of this bird, which is plentiful in Cuba, Mr. MacLeay has given a very interesting account, in a paper lately read before the Linnean Society. I shall not anticipate the valuable information contained in that communication, by any remarks at present.

9. *MUSCICAPA VIRENS.* *Linn.*, I. p. 237. no. 11. *Prince of Musign.*, *Gen. N. Am. Birds.* sp. 47.

*Muscicapa rapax.* *Wils.*, *Am. Orn.* II. p. 81.

Wood Pewee Flycatcher. *Id.*, *ib.* pl. XIII. f. 5.

10. *TURDUS RUBRIPES.* *Temm.*

Merle à pieds rouges. *Id.*, *Pl. Col.* 409.

This beautiful species, which has been lately described by M. Temminck, seems to be peculiar to the Island of Cuba.

11. *SYLVIA CANADENSIS.* *Lath.*, *Ind. Orn.* p. 539. no. 117.  
*Prince of Musign.*, *Gen. N. Am. Birds.* sp. 25.

*Motacilla Canadensis.* *Linn.*, I. p. 336. no. 42.

Black throated Warbler. *Penn.*, *Arct. Zool.* II. p. 285.  
*Lath.*, *Gen. Hist.* VIII. p. 162. no. 211.

Black throated Blue Warbler. *Wils.*, *Am. Orn.* II.  
p. 115. pl. 25. f. 3.

12. *SYLVIA CORONATA.* *Lath.*, *Ind. Orn.* p. 538. no. 115.  
*Vieill.*, *Ois. d'Am. Sept.* pl. 78. & 79. *Wils.*, *Am.*  
*Orn.* II. p. 138. & V. p. 121. *Prince of Musign.*,  
*Gen. N. Am. Birds.* sp. 104.

*Motacilla coronata.* Linn., I. p. 538. no. 115.

Yellow Rump Warbler. Wils., *Am. Orn.* pl. 17. f. 4.  
& pl. 45. f. 5.

Fauvette tachetée de La Louisiane. *Pl. Enl.* 709. f. 1.

Figuier du Mississippi. *Pl. Enl.* 731. f. 2. (juv.)

13. SYLVIA MACULOSA. Lath., *Ind. Orn.* p. 563. no. 108.  
*Vieill., Ois. d'Am. Sept.* pl. 93. *Prince of Musign.,*  
*Gen. N. Am. Birds.* sp. 106.

*Motacilla maculosa.* Gmel., I. p. 984. no. 151.

*Sylvia magnolia.* Wils., *Am. Orn.* III. p. 63.

Yellow rumped Flycatcher. Edw., *Glean.* pl. 255.

Yellow rumped Warbler. Penn., *Arct. Zool.* II. pl.  
288. Lath., VII. p. 156. no. 203.

In making this species of Dr. Latham synonymous with the *Sylv. magnolia* of Wilson, I am entirely guided by the observations of the Prince of Musignano, in his very valuable work on the nomenclature of the "American Ornithology." I must also refer to that work for the synonyms of the two preceding species of *Sylvia*, as well as for those of *Musc. virens*. The confusion previously existing in the names of these species has been ably cleared up by the Prince.

14. SYLVIA PENSILIS. Lath., *Ind. Orn.* p. 520. no. 41. *Vieill.,*  
*Ois. d'Am. Sept.* pl. 90. *Prince of Musign., Gen. N.*  
*Am. Birds.* sp. 110.

*Sylvia flavicollis.* Wils., *Am. Orn.* II. pl. 64.

Yellow throated Warbler. *Id., Ib.* pl. 12. f. 6.

Here again I rely on the accuracy of the same diligent observer for the synonyms of this species.

15. PYRRHULA NIGRA. *Vieill., Gal. des Ois.* p. 65. pl. 57.  
*Loxia nigra.* Linn., I. p. 306. no. 40.  
Little Black Bulfinch. *Albin,* III. t. 69.

16. PYRRHULA COLLARIS.

*Pyrr. supra olivaceo-virens, subtus pallidior, fronte gulâ fasci-  
âque pectorali nigris, collari flavo.*

*Rostrum* nigrum. *Pedes* pallidi. Longitudo corporis,  $3\frac{5}{8}$ ; *rostri*  $\frac{3}{8}$ ; *alæ* a carpo ad remigem 3<sup>tiam</sup>,  $1\frac{7}{8}$ ; *caudæ*,  $1\frac{5}{8}$ ; *tarsi*,  $\frac{5}{8}$ .

## 17. TANAGRA ZENA.

*Fringilla zena*. Linn., I. p. 320. no. 13.

*Tanagra multicolor*. Vieill., *Gal. des Ois.* p. 100. pl. 76.

Orange Finch. Penn., *Arct. Zool.* II. no. 241. Lath.,  
*Gen. Hist.* VI. p. 138. no. 128.

I have referred this bird to the Linnean genus *Tanagra*, not having had an opportunity of investigating the characters of the numerous genera lately formed in that extensive group. M. Vieillot seems to make it the type of the restricted genus *Tanagra*; but he has changed the specific name, for what reason I know not. It is equally difficult to assign a reason for the bird having been placed among the *Fringillæ*.

## 18. ICTERUS DOMINICENSIS.

*Oriolus Dominicanus*. Linn., I. p. 163. no. 14.

St. Domingo Oriole. Lath., *Gen. Hist.* III. p. 122. no. 34.

Carouge de St. Domingue. *Pl. Enl.* 5. f. 2.

There is a bird in the collection which approaches so nearly to this last species in general shape, and in the disposition of the markings, although it differs totally in the ground colour, that I would almost venture to pronounce it to be the female or young male of the species. Its colour is olive green, with a yellowish tint in all those spots where the yellow prevails in the *Icterus Dominicanus*. The forehead and throat are black, that colour so far appearing to blend into the olive, as to indicate a change into the total black of the above named species. The shape and dimensions are the same, with the exception of those of the bill, which is in a slight degree stronger and longer than that of *Ict. Dominicanus*. Should the bird prove distinct, it may receive the name of *virescens*, and the following specific character.

*Ict. olivaceo-viridis, fronte gulæque nigris, tectricibus alarum superioribus et inferioribus, uropygio, abdomine imo femorumque tectricibus flavescentibus.*

## 19. LEISTES HUMERALIS.

*Leist. corpore rostro pedibusque nigris, ptilis rufescenti-aurantiacis.*

Longitudo corporis,  $6\frac{3}{8}$ ; rostri ad frontem,  $\frac{11}{16}$ , ad rictum,  $\frac{13}{16}$ ; alæ a carpo ad remigem 3<sup>tiam</sup>,  $3\frac{1}{4}$ ; caudæ,  $3\frac{3}{8}$ ; tarsi,  $\frac{7}{8}$ .

20. STURNELLA LUDOVICIANA. *Vieill., Gal. des Ois. p. 134. pl. 90.*

*Sturnus Ludovicianus. Linn., I. p. 290. no. 3. Prince of Musign., Gen. N. Am. Birds. sp. 48.*

*Alauda magna. Linn., I. p. 289. no. 11. Wils., Am. Orn. III. p. 20. pl. 19. f. 2.*

*Louisiane Stare. Lath., Gen. Hist. V. p. 6. no. 4.*

21. QUISCULUS VERSICOLOR. *Vieill., Gal. des Ois. p. 171. pl. 100. Prince of Musign., Gen. N. Am. Birds, sp. 56. Am. Orn. I. p. 45. pl. 5. f. 1. Female.*

*Gracula quiscula. Linn., I. p. 165. no. 7. Wils., Am. Orn. III. p. 44.*

*Purple Grakle. Penn., Arct. Zool. II. no. 153. Wils., Am. Orn. pl. 21. f. 4. Lath., Gen. Hist. III. p. 174. no. 35.*

The name of this genus has been lately changed into that of *Chalcophanes*, by M. Temminck, [Pl. Col. 214] on no grounds that to me at least appear sufficient to authorise the erasure of an established name. A change it is true has been still more lately asserted to be necessary,\* in consequence as is alleged of the name being pre-occupied in Botany. If it is the Linnean genus *Quisqualis* that is alluded to (and I know no other that at all approaches to the name of M. Vieillot's genus), the change appears to me uncalled for. Differing totally in the source from whence it is derived, and in the signification which it bears, and clashing neither in orthography nor pronunciation, *Quiscūlus*† can never, I think, be confounded with *Quisquālis*.

\* See Philos. Magazine for June, 1827.

† This appears to be the original Linnean orthography of the word. It has latterly been written *Quiscalus*.

22. CORVUS JAMAICENSIS.? *Gmel.*, I. p. 367. no. 24.  
 Cornix Jamaicensis.? *Briss.*, *Orn.* II. p. 22. no. 5.  
 Chattering Crow.? *Lath.*, *Gen. Hist.* III. p. 56. no. 59.  
 Corvus nasicus. *Temm.*  
 Corbeau nasique. *Id.*, *Pl. Col.* 413.

The specimen in the Cuban collection which I refer to the above synonyms differs from our own *Corvus corone*, in the following particulars. The colour is black, without any metallick gloss; the bill is equal in length to that of the European species, and nearly similar in shape, but it is somewhat more slender, and appears rather more compressed when viewed from above; it is smooth, but not shining. The bristles which cover the nostrils are much shorter than in our species, and instead of lying forward in a parallel direction with the bill, they point obliquely upwards, their ends nearly meeting towards the *culmen*. The skull is much smaller and more delicately shaped than that of *Corv. corone*. The general size of the bird also is less. I have referred it to the above species of Gmelin, as the first belonging to the West Indian islands, that was separated from *Corv. corone*. The descriptions however given by the authours first cited, are too vague to enable me to say decidedly that our species is identical with theirs. The characters given by Dr. Latham of "*toto corpore artubusque nigris*" or "*totus niger*," as given by Gmelin, may be applicable to any number of species. M. Brisson, in general so accurate in his discrimination of species, fails us here. He confines the details of his *Cornix Jamaicensis* merely to the dimensions. Our species has been described by M. Temminck as new in his "*Planches Coloriées*:" but until the *Corv. Jamaicensis* is better known it appears to me adviseable to leave the question undecided. We have no example of the Jamaica bird in this country. It is probable that M. Temminck has already ascertained the point, but he does not clear it up.

23. TROGON TEMNURUS. *Temm.*  
 Couroucou temnure. *Id.*, *Pl. Col.* 326.

This beautiful bird, for the first description of which we are indebted to the zeal of M. Temminck, seems hitherto not to have been known out of Cuba.

24. PSITTACUS LEUCOCEPHALUS. *Linn.*, I. p. 147. no. 30.

White headed Parrot. *Edw.*, t. 166.

White fronted Parrot. *Lath.*, *Gen. Hist.* II. p. 235.  
no. 177.

Perroquet à front blanc du Sénégal. *Pl. Enl.* 338.

25. PICUS PERCUSSUS. *Temm.*

Pic. poignardé. ♀ *Id.*, *Pl. Col.* 424.

*Pic. virescens, vertice strigâ auriculari alis caudâque nigris albo-notatis, cristâ maculâque gulari coccineis; subtus pallidior, nigro fasciatus.*

*Frontis verticisque plumæ nigræ, albo-striatæ; genarum albæ, strigâ auriculari ab oculò extendente nigrâ. Crista subelongata maculaque grandis gularis coccineæ. Pectoris plumæ albæ, in medio nigro striatæ. Dorsum, scapulares tectrices superiores uropygiumque virescentes, hoc fusco leviter fasciato. Remiges nigræ; omnium pogoniis internis ad margines albo maculatis; extimarum duarum pogoniis externis albo, mediarum albo et virescenti, reliquarum, tribus ultimis secundariarum exceptis, virescenti ad margines maculatis: his tribus ultimis virescentibus, in medio nigro notatis. Rectrices nigræ, omnes ad basin albo striatæ, et, duabus mediis exceptis, ad margines albo maculatæ; subtus, mediæ ad basin, reliquæ per totam longitudinem, albo fasciatæ. Abdomen crissumque virescenti-alba, nigro fasciatæ. Longitudo corporis,  $10\frac{1}{2}$ ; rostri ad frontem,  $\frac{3}{4}$ ; ad rictum,  $1\frac{1}{4}$ ; alæ a carpo ad remigem 4<sup>am</sup>,  $4\frac{1}{2}$ ; caudæ,  $4\frac{1}{2}$ ; tarsi,  $\frac{7}{8}$ .*

I had considered this bird a new species, and had described it accordingly, until I saw it figured in one of M. Temminck's new plates, as the female of *Picus percussus* (*Pl. Col.* 390). I have let my description stand, as entering somewhat more into the characters of the bird than that given by M. Temminck, in the letter-press to the above plate. There is no specimen of the male in Mr. MacLeay's collection.

26. COLAPTES AURATUS. *Swainson.*

*Picus auratus. Linn.*, p. 174. no. 9. *Wils.*, *Am. Orn.* I. p. 45. *Prince of Musign.*, *Gen. N. Am. Birds.* sp. 36.

Goldwinged Woodpecker. *Lath., Gen. Hist.* III. p. 408.

no. 83. *Wils., Am. Orn. pl.* 3. f. 1.

Pic rayé du Canada. *Pl. Enl.* 693.

27. COLAPTES FERNANDINÆ.

*Col. nigrescens, pallido flavo graciliter fasciatus ; capite fulvo fusco-striato, lineâ suboculari nigrâ.*

*Capitis* plumæ fulvescentes, in medio graciliter fusco-striatæ ; *menti* albescentes in medio nigro latius striatæ, lineâ nigrâ latâ sub oculos a rictu descendente. *Corporis* supra plumæ ad basin grisescentes, deinde nigrescentes, fasciis tribus subflavis notatæ. *Remiges* supra nigræ, pogoniis utrinque fasciis plurimis subflavis marginatis ; infra pallidé fuscæ, ad basin flavescentes, fasciisque pallidioribus utrinque marginatæ, *rhachibus* auratis. *Tectrices* inferiores flavæ, nigro leviter notatæ. *Rectrices* supra fuscæ, fasciis confertis gracilibus notatæ, *rhachibus* auratis. Longitudo *corporis*,  $13\frac{1}{2}$  ; *rostri*,  $1\frac{3}{4}$  ; *alæ* a carpo ad remigem 4<sup>am</sup>,  $5\frac{1}{2}\frac{7}{8}$  ; *caudæ*,  $5\frac{2}{3}$  ; *tarsi*,  $1\frac{1}{4}$ .

I have named this species in honour of the Conde de Fernandina, at the express desire of Mr. MacLeay, who had received various marks of attention and assistance in his Zoological pursuits from that nobleman, a resident and extensive proprietor in the Island of Cuba. It is to be observed, that Fernandina was the original Spanish denomination of the Island.

28. COLAPTES SUPERCILIARIS.

*Picus superciliaris. Temm.*

Pic sourcil-noir. *Id., Pl. Col.* 433.

29. CROTOPHAGA ANI. *Linn., I. p.* 154. no. 1.

Lesser Ani. *Lath., Gen. Hist.* II. p. 336. no. 1. pl. 36.

Petit Bout-de-Petun. *Pl. Enl.* 102. f. 2.

30. COLUMBA ZENAIDA, ♂. *Prince of Musignano.*

I cannot at this moment refer to the work in which this species has been characterized. The bird, however, was identified \* as

\* See the present Vol. p. 53.

the male of the above species, by the Prince of Musignano himself, when lately in this country.

31. COLUMBA LEUCOCEPHALA. *Linn.*, I. p. 281. no. 14. *Ray*,  
*Syn. Av.* p. 63. no. 16. p. 184. no. 24.  
White crowned Pigeon. *Penn.*, *Arct. Zool.* II. no. 189.  
*Lath.*, *Gen. Hist.* VIII. p. 48. no. 61.

32. COLUMBA INORNATA.

*Col. plumbea*, capite collo pectore abdomine tetricibusque alarum mediis rufo-vinaceis.

*Remiges plumbeæ*, exterioribus leviter albido marginatis. *Ptila* pteromatibus proxima sunt rufo-vinacea; pteromata plumbea, extimis graciliter albo-marginatis. *Tectrices* inferiores pallidè plumbeæ. *Rectrices* subtus saturatiores. *Rostrum* fuscum. *Pedes* rubri. Longitudo corporis,  $15\frac{1}{2}$ ; rostri,  $1\frac{1}{4}$ ; alæ a carpo ad remigem  $2\frac{1}{2}$ dam,  $8\frac{5}{8}$ ; caudæ,  $6\frac{1}{2}$ ; tarsi, 1.

I feel much hesitation in describing this species as new. The specimens in the collection are in bad condition, and vary among themselves. The above description is taken from that which is least injured. It appears to come very near to M. Temminck's description of the female of his *Col. rufina*, a species I have not seen, but it differs in the dimensions, and has not the "gorge blanche."

33. NYCTICORAX VIOLACEA.

*Ardea violacea*, *Linn.*, I. p. 238. no. 16. *Wils.*, *Am. Orn.* VIII. t. 65. f. 1.

*Ardea Cayennensis*. *Gmel.*, I. p. 626. no. 31.

Cayenne Night Heron. *Lath.*, *Gen. Hist.* IX. p. 63. no. 24.

Le Bihoreau de Cayenne. *Pl. Enl.* 899.

34. ARDEA EXILIS. *Gmel.*, I. p. 645. no. 83. *Wils.*, *Am. Orn.* VIII. p. 37.

Minute Heron. *Lath.*, *Gen. Hist.* IX. p. 72. no. 34.

Least Bittern. *Wils.*, *Am. Orn.* pl. 65. f. 4.



35. ARDEA ALBA. *Linn.*, I. p. 239. no. 24.  
Ardea Egretta. *Gmel.*, I. p. 629. no. 34. *Wils.*, *Am. Orn.* VII. p. 160.  
Great Egret. *Penn.*, *Arct. Zool.* II. no. 846. *Lath.*, *Gen. Hist.* IX. p. 82. no. 44.  
La grande Aigrette. *Pl. Enl.* 925.

I perfectly agree with the Prince of Musignano in the propriety of restoring the original Linnean name of *alba* to this species: although that name was first applied to the young bird, it has the right of priority in designating the species in all its stages.

36. ARDEA VIRESCENS. *Linn.*, I. p. 238. no. 20. *Wils.*, *Am. Orn.* VII. p. 97.  
Green Heron. *Lath.*, *Gen. Hist.* IX. p. 106. no. 72.  
*Wils.*, *Am. Orn.* pl. 61. f. 1.  
Le Crabier vert tachetée. *Pl. Enl.* 912.

37. ARDEA CÆRULEA. *Linn.*, I. p. 238. no. 17. *Wils.*, *Am. Orn.* VII. p. 117.  
Blue Heron. *Lath.*, *Gen. Hist.* IX. p. 116. no. 84.  
*Wils.*, *Am. Orn.* pl. 62. f. 3.  
Heron bleuâtre de Cayenne. *Pl. Enl.* 343.

38. TANTALUS LOCULATOR. *Linn.*, I. p. 240. no. 1. *Wils.*, VIII. p. 39.  
Wood Ibis. *Wils.*, pl. 56. f. 1. *Lath.*, *Gen. Hist.* IX. p. 141. no. 1.

39. ARAMUS SCOLOPACEUS. *Vieill.*, *Gal. des. Ois.* pl. 252.  
Ardea scolopacea. *Gmel.*, I. p. 647. no. 87.  
Scolopaceous Heron. *Lath.*, *Gen. Hist.* IX. p. 134. no. 116.  
Le Courlan ou Courliri. *Pl. Enl.* 848.

40. TOTANUS CHLOROPYGIUS. *Vieill.*  
Tringa solitaria. *Wils.*, *Am. Orn.* VII. p. 53.  
Solitary Sandpiper. *Id.*, *Ib.* pl. 58. f. 3.

41. **TOTANUS FLAVIPES.**  
*Scelopax flavipes.* *Gmel.*, I. p. 659. no. 31. *Wils.*,  
*Am. Orn.* VII. p. 55.  
 Yellow-winged Snipe. *Penn.*, *Arct. Zool.* II. no. 378.  
*Lath.*, *Gen. Hist.* IX. p. 234. no. 35.  
 Yellow-shanks Snipe. *Wils.*, *Am. Orn.* pl. 58. f. 4.
42. **GALLINULA MARTINICA.** *Lath.*, *Incl. Orn.* p. 769. no. 9.  
*Fulica Martinica.* *Linn.*, I. p. 259. no. 7.  
 Martinico Gallinule. *Lath.*, *Gen. Hist.* IX. p. 417.  
 no. 27. pl. 160.
43. **PARRA JACANA.** *Linn.*, I. p. 259. no. 3.  
 Chesnut Jacana. *Lath.*, *Gen. Hist.* IX. p. 324. no. 1.  
 Spur-winged Water Hen. *Edw.*, t. 357.  
 Le Jacana. *Pl. Enl.* 322.  
*Junior.* *Parra variabilis.* *Linn.*, I. p. 260. no. 4.  
 Variable Jacana. *Lath.*, *Gen. Hist.* IX. p. 385. no. 2.  
 Spur-winged Water Hen. *Edw.*, t. 48.  
 Le Jacana du Brasil. *Pl. Enl.* 846.

This latter Linnean species is now, I believe, generally considered as the young of the *Parra Jacana*, I know not upon what authority. In the Cuban collection there are three specimens of each of these reputed species, none of which are intermediate. I have called Mr. MacLeay's attention to this point, and hope to have it cleared up upon the spot.

44. **CHARADRIUS VOCIFERUS.** *Linn.*, I. p. 253. no. 3. *Wils.*,  
*Am. Orn.* VII. p. 73.  
 Noisy Plover. *Penn.*, *Arct. Zool.* II. no. 400. *Lath.*,  
 IX. p. 315. no. 3.  
 Kildeer Plover. *Wils.*, *Am. Orn.* VII. pl. 59. f. 6.
45. **ANAS SPONSA.** *Linn.*, I. p. 207. no. 43. *Wils.*, *Am. Orn.*  
 VIII. p. 97.  
 Summer Duck. *Edw.* t. 101. *Penn.*, *Arct. Zool.* II.  
 no. 493. *Lath.*, *Gen. Hist.* X. p. 361. no. 121.  
*Wils.*, *Am. Orn.* pl. 70. f. 3.  
 Beau Canard Huppé. *Pl. Enl.* 980. ♂. 981 ♀

[To be continued].

ART. XLVII. *Descriptions of two Species of the genus Felis, in the collection of the Zoological Society.* By N. A. VIGORS, Esq., A.M., F.R.S., &c., and THOS. HORSFIELD, M.D., F.L.S., &c.

AMONG the valuable acquisitions to science which were the result of the late lamented Sir Stamford Raffles's researches in Sumatra, are two species of *Felis*, apparently unknown to naturalists. No description at least that comes near them is to be found in M. Temminck's Monograph of that genus; and when we consider the assiduity with which that indefatigable naturalist investigated the subject, and the ample means he possessed of comparison, we may fairly, we conceive, conclude, that every species which escaped his notice must have been previously unrecorded.

The first of these subjects is a small *Cat*, distinguished at once by the extreme depression of the skull. This depression extends along the nose to the extremity of the muzzle, the sides of which are laterally distended. The head itself is more lengthened and cylindrical than in the domestic cat. The distance between the eyes and ears is comparatively great. The cylindrical form and lateral contraction of the head is singularly contrasted by an unusual length of teeth. The canine teeth, in particular, are nearly as long as in an individual of double its size. The grinders agree in number with the rest of the genus, but they are more compressed than usual, and the lateral appendages and points are more developed. The general habit of body of our species is slender, and the extremities are delicate and lengthened. The number of toes, in both pair of feet, is the same as in the true cats. The papillæ of the tongue are prominent and sharp. The tail is short, being only five inches and a half in length. This member is mutilated in the specimen from which our figure is taken, but an individual preserved in spirit has furnished us with the perfect dimensions. The former specimen appears to have arrived at full size; the latter belonged to an individual considerably advanced in age. This appears from the state of the teeth, which are greatly worn by attrition, and the posterior or tubercular teeth

have disappeared, their place however being still apparent in the jaw.

This species departs in several of its characters from the true Cats. By the form of the head, the length of the canine teeth, the compressed character and marked points of the grinders, it approaches to *Prionodon*; but it wants the acute nose, the additional teeth, the lengthened tail, the highly painted exterior, and several other particulars of the group to which *Prionodon* belongs. In its form and habit it has some resemblance to *Mustela*; but its face has the true physiognomy of the feline tribe. Its place in the series cannot be determined without a more minute comparison of its various peculiarities than we can at present undertake.

#### 1. FELIS PLANICEPS.

*Fel. rufo-brunneus, laterum pilis albo terminatis, dorso saturatiore; capite rufo, lineis duabus interocularibus ad occiput ferè extendentibus, genis, thorace, abdomineque imo albis.*

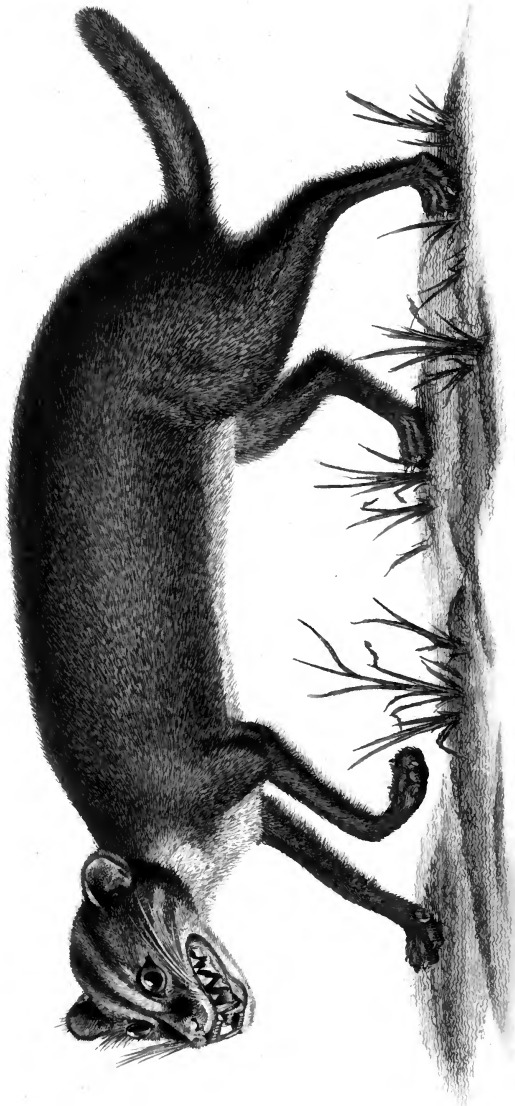
#### Tab. XII.

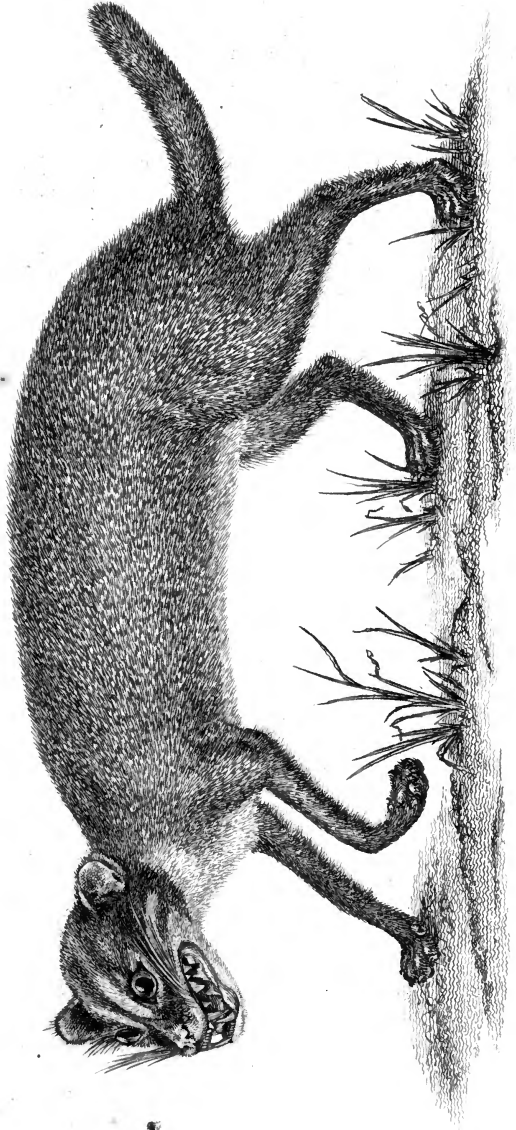
The hairs of the body are fuscous at the base, then brown, and terminated with white, those of the middle of the back excepted, which are without the white: a dorsal line is thus formed along the back, which is conspicuously deeper in colour than the other parts of the body. Two light coloured streaks, commencing between the eyes, run backwards towards the *occiput*, growing fainter as they approach that part; between them is a deep rufous line, darker at its commencement.

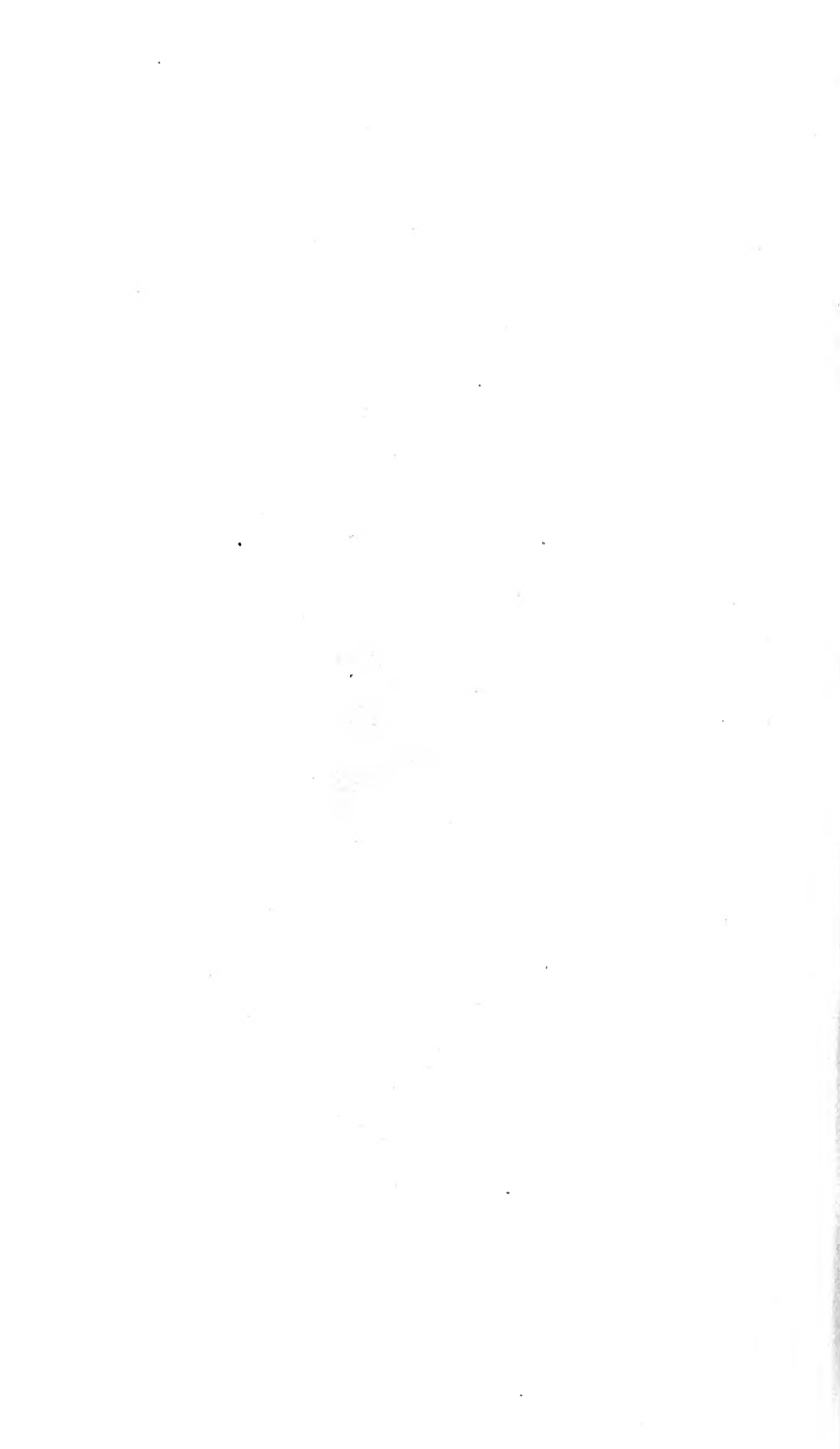
#### DIMENSIONS.

Length of the body and head from the extremity of the nose to the root of the tail . . . . .	18 inch
Length of the tail . . . . .	5½
———— the head . . . . .	4
Breadth of the head across the ears . . . . .	2¼
Distance between the eyes . . . . .	¾
Height at the shoulder . . . . .	7½
———— the rump . . . . .	8
Length of the anterior <i>tarsus</i> and toes . . . . .	1¾
———— posterior ditto . . . . .	2¾











The second species comes in form more near to the true *Tiger Cats*. Its colour however is uniform, and it exhibits none of the streaks or spots which generally prevail in the tribe.

2. FELIS TEMMINCKII.

*Fel. rufus, fronte strigis duabus albidis tribusque brunneis alternantibus notatá, auribus externé nigris intus albidis, mento thoracé abdomineque albidis.*

Tab. Supp. XXII.

The distinguishing character of this species is the uniform distribution of a reddish brown fur over the neck, back, sides of the body, tail, and extremities. The head is tawny inclining to grey; at the inner *canthus* of each eye a grey line commences, which passes over the forehead to the *occiput*, gradually increasing in breadth, and having externally a dark brown margin, which is more saturated at its commencement near the eyes. The throat, *abdomen*, interior of the thighs, and cheeks are grey; the latter, as well as the sides of the head and lips, are streaked with reddish brown. The ears are dark brown above and grey underneath.

In size, this species is near the domestic cat; its general habit is robust: the posterior extremities are remarkably stout; the head is short, full, and regularly feline. The feet are clothed with a thick fur, and appear of an unusual thickness. The tail, in the specimen described, is slightly attenuated.

DIMENSIONS.

Length of the body and head from the extremity of the nose to the root of the tail . . . . .	19 inch.
Length of the tail . . . . .	12½
—— of the head . . . . .	4¼
Breadth of the head across the ears . . . . .	3
Distance between the eyes . . . . .	1
Height of the shoulder . . . . .	10
—— the rump . . . . .	11
Length of the anterior <i>tarsus</i> and toes . . . . .	1½
—— posterior ditto . . . . .	2

ART. XLVIII. *Analytical Notices of Books.*

---

*Narrative of Travels and Discoveries in Northern and Central Africa, in the Years 1822, 1823, and 1824. By MAJOR DENHAM, CAPTAIN CLAPPERTON, and the late Dr. OUDNEY.*  
4to.

IN noticing a volume so pregnant with interest as the present, it is not a little annoying to feel ourselves restricted to a mere technical analysis of one of the least important parts of its Appendix. Precluded by the nature of our review from alluding to the discoveries in the hitherto impenetrable regions of central Africa, which have crowned the labours of our gallant countrymen, it would be equally inconsistent with the strict line of our duty to advert to the ardent and persevering zeal which supported them through difficulty and peril to lands untrodden by European feet, and scarcely known to us even by report. On the Zoological facts alone with which they have furnished us are we at liberty to dwell; and although these present, comparatively, little of striking interest or novelty, they afford a convincing proof of the devotion of our travellers to the acquisition of knowledge in every department within their reach. With no other cutting instrument than a penknife, belonging to Major Denham, and with only a little arsenical soap, left from the stores of the late Mr. Ritchie, they succeeded in preserving upwards of a hundred skins of animals, and transported them across the almost interminable deserts, which they traversed on their return. Of these many were found on their arrival in England to be utterly destroyed. The remainder have been rendered available to science by Mr. Children and Mr. Vigers, to whom we are indebted for the Zoological Appendix now under consideration, in which thirty-nine species of mammiferous quadrupeds, birds, and reptiles, are noticed.

Of the *Mammalia* thirteen species are recorded, the whole of which have been previously described. One of them alone appears

capable of exciting any peculiar interest: we allude to the *Fennec*, the very existence of which seems almost to have been doubted by many continental Zoologists, who have received with suspicion the accounts of it transmitted to us by Bruce. The accuracy of that traveller's description is however fully maintained by the specimen brought home by Major Denham and Capt. Clapperton. It is referred to the genus *Fennecus*, established, according to Illiger, by M. Lacépède, and its dentary formula is thus given, though not without hesitation on account of the imperfect state of the teeth, and the impossibility of minutely examining them in a cranium attached to the skin: "Dentes primores  $\frac{6}{6}$ ; laniiarii  $\frac{1}{1}$ ; molares  $\frac{6}{7}$ ". Its specific character is "F. suprâ rufescenti-albus, subtùs pallidior; maculâ suboculari rufâ; cauda maculâ sub-basali nigrescenti-brunneâ, apice nigro." The trivial name of *Cerdo* is provisionally retained for it, being that applied to an animal in the Frankfort Museum figured by Mr. Griffith, which is probably identical with it: should they however prove hereafter to be distinct, the species now brought to England will be known by Desmarest's appellation of *F. Brucei*. A spirited representation of the animal is given; the history of our knowledge respecting it is traced; and a careful description, accompanied with the necessary measurements, completes the first detailed Zoological account of this elegant species. It may be proper to add, that the possession of a detached skull recently added, with a set-up specimen, to the collection of the Zoological Society, has since enabled Mr. Vigors to ascertain that the teeth of the *Fennec* correspond almost precisely with those of the *Fox*.

Among the Birds, which are twenty-four in number, there are several new species. The first of these, *Francolinus Clappertoni*, is thus characterized; "F. suprâ brunneus fulvo-variegatus; subtùs fulvo-albidus, maculis longitudinalibus brunneis aspersus; strigâ superciliari, subocularique, gulâ, genisque albis, his brunneo-lineatis." It was met with in tolerable abundance, frequenting sand-hills covered with low shrubs, and running with great speed. Another is the *Otis Denhami*, "O. fusco-brunnea et pallido-fulvo undulatim punctulata, capite brunnescenti-nigro,

superciliis genis gulâque albidis, collo rufo, pectore cinereo; pteromatibus remigibus reatricibusque nigris, istis albo-maculatis, his albo-fasciatis; corpore subtùs rufescenti-albo." This species closely resembles the description given by Dr. Latham of his African Bustard, but does not exhibit the striking character of bareness of the head. It resorts during the rainy season to the neighbourhood of the larger towns, where it frequents moist places, and is always found in company with Gazelles. Like those of that elegant animal, its eyes are remarkable for their size and brilliancy, and furnish an equally frequent topic of comparison in those wild effusions, in which the Arab poet delights to celebrate the beauties of his beloved. The third species described is the *Ardea melanocephala*, "A. cinerea; capite cristato, colli parte posteriore lateribusque, regione interhumerali, remigibus, reatricibusque nigris, gulâ collique parte anteriore albis." It differs from *A. cinerea* chiefly by its entirely black head and the black on the hind part of the neck and on the back between the shoulders. From the strength of these markings, and the development of the crest, the specimen appears to be adult. The bird was found in great abundance in all the lakes and marshes throughout the route. The remaining species are well known to the ornithologist, and consequently do not require our particular notice. The enumeration of them is, however, usually accompanied by notes illustrative of their habits and localities. The name of *Ciconia Marabou*, improperly assigned by Temminck to the Indian species, is here used to designate that of Africa, for which the same authour had employed the appellation of *C. Argala*, previously and correctly applied by Dr. Latham to the Asiatic bird.

The *Reptilia* are only two, the *Monitor Niloticus* and *Chamæleo vulgaris*.

The living animals brought home by the expedition, were chiefly transferred to his Majesty's collection at Windsor.

---

*Monographies de Mammalogie* ; par C. J. TEMMINCK. *Livraisons*  
5—7. 4to.

THE genus *Pteropus*, which forms the subject of the fifth Monograph, was originally proposed by Brisson, but it appears to be impossible now to ascertain from which of the species contained in it his characters were derived. It was however adopted by succeeding writers, although no clear idea of it or of its extent was obtained, until the publication by M. Geoffroy-Saint-Hilaire, in the 15th volume of the *Annales du Museum*, of his very able memoirs on the *Cheiroptera*. In the article dedicated to this genus, the *Roussette* of the French and many continental authors, that learned professor described eleven species, the greater part of which were new ; but of these M. Temminck considers two to be merely varieties. By the discoveries of recent travellers the number has since been considerably increased, and we are here presented with no less than seventeen well-determined species. They are divided into three sections, which are characterized chiefly by the presence or absence of the tail. We propose to enumerate them in the order in which they occur, dwelling of course especially on those which are now for the first time noticed.

\* Snout more or less elongated ; tail none : interfemoral membrane more or less rudimentary. Entirely frugivorous.

1. *P. edulis*, the *P. Javanicus* of Dr. Horsfield and *Ternate Bat* of Pennant. It includes the *P. edulis* and *P. Edwardsii* of Geoffroy, which exhibit no differences except unimportant variations in colouring.

2. *P. medius*. When adult equal in size only to young individuals of the preceding species. Form slender ; but the body and snout shorter than in *P. edulis* ; membrane of flight much narrower, especially near the coccyx. Ears long and pointed. Head, occiput, throat, and region of the insertion of the wings, blackish chesnut ; back blackish, slightly tinged with brown ; back of the neck yellowish rufous ; sides of the neck, and all the under surface, except the throat and the humeral region, of a brown red resembling the colour of dead leaves ; membranes

brown. It inhabits the continent of India, in the vicinity of Calcutta and Pondicherry.

3. *P. phaiops*. Size of the preceding. Body very large; snout long; eyes more distant from the nostrils than from the ears; ears short and pointed; interfemoral membrane broad on the tibia, but on the coccyx merely rudimentary and hidden by the long hairs. Snout, throat, cheeks, and orbits, deep black; the remainder of the head and neck, and the shoulders, straw-coloured; back dark chesnut, with a few yellowish hairs; hairs of the under parts brown at their base, and of a light straw colour at their points, except on the breast, where they are entirely of a very bright red. Membranes black. Inhabits Madagascar.

4. *P. poliocephalus*. Smaller than *P. edulis*. Body thicker than in the last species: interfemoral membrane broad on the metatarsus, disappearing gradually until it is entirely wanting on the coccyx; ears moderate, pointed. Upper part of the head, cheeks, and throat, dark cinereous, becoming griseous on the occiput; back of the neck, and part of its front, and the shoulders, reddish chesnut, divided by a black band from the cinereous fur which covers the remainder of the body. Inhabits Australia.

5. *P. dasymallus*, erroneously referred by Siebold in his *Spicilegia Faunæ Japonicæ* to the *P. rubricollis*. It is smaller than the *P. medius*, and its membranes of flight are less extensive proportionally than those of any other species. Interfemoral membrane wanting at the coccyx, rudimentary along the legs, and visible at the heel alone. Ears small, pointed, almost hidden in the thick fur. Face, top of the head, cheeks, throat, and region of the ears, brown with a few griseous hairs; front, sides, and back of the neck, and shoulders, yellowish dirty white; the rest of the body deep brown, the points of the hairs being ochraceous. Membranes deep brown. It inhabits Japan.

6. *P. vulgaris*, Geoff. It is the *Vespertilio Vampyrus* of Schreber; but not of Linné or Gmelin, which refers to a species that cannot now be determined with certainty.

7. *P. rubricollis*, Geoff. The name of this species has been frequently misappropriated, and is in fact applicable to seven out of the eight larger *Pteropi*, in all of which the neck is more or less red.

8. *P. pallidus*. Smaller than the *P. edulis* of one year's growth. Snout short, rather obtuse; ears rounded, shorter than the distance from the eyes to the point of the nose; interfemoral membrane rudimentary at the coccyx. Back of the neck, shoulders, and collar, red; back pale brown; head, throat, belly, and membranes, pale brown, imitating in colour a dead leaf. It inhabits the Island of Banda.

9. *P. Keraudrenius*, Quoy and Gaim.

10. *P. griseus*, Geoff.

11. *P. personatus*. Size of the last. Ears moderately long, rather rounded at the end; interfemoral membrane rudimentary. Pure white on the back of the neck, extending beyond the eyes, and forming a spot behind them; and also on the cheeks, the lips, and the chin: the throat is covered by a broad brown zone, the extremities of which surround the cheeks, form broad eye-brows, and extend themselves in two parallel lines which terminate at the nostrils: occiput, neck, and part of the breast, straw-coloured: shoulders whitish: back griseous, with a few light brown hairs: hairs of the under surface cottony, brown at their base, and isabella-coloured at their tips. It inhabits the Moluccas.

12. *P. melanocephalus*. Very small, the extended membranes measuring only eleven inches. Ears small, short, and rounded; interfemoral membrane rudimentary, nearly hidden by the fur; snout very short. Back of the neck, occiput, and snout, black; hairs of the back yellowish white at the base; dark cinereous at the apex; of the under surface, yellowish white. Membranes dark brown. It was found in Java by Van Hasselt.

\*\* Snout rather elongated and slender: tail rudimentary, almost imperceptible, not extending beyond the interfemoral membrane. Frugivorous.

13. *P. minimus*, Geoff. The *P. rostratus* of Dr. Horsfield is said to be synonymous with it. The figure of the Kiodote of M. F. Cuvier is also referred to it. The details of the teeth and tongue of the latter, which has been regarded as the type of the genus *Macroglossus*, are stated by no means to agree with the Javanese specimens.

\*\*\* Tail more or less elongated, extending one-half of its length beyond the interfemoral membrane. Probably partly insectivorous.

14. *P. stramineus*, Geoff.

15. *P. Geoffroyi*, the *P. Ægyptiacus* of Geoffroy-Saint-Hilaire, a trivial name which M. Temminck has ventured to change because the animal has since been discovered out of Egypt. We would join him most cordially in testifying respect for the naturalist to whom he has dedicated it; but we cannot agree with him that it is "dans l'intérêt de la science" to set aside a name which possesses the powerful claim of priority.

16. *P. titthæcheilus*. Size rather less than the preceding species. Snout short: eyes nearer to the nostrils than to the ears; ears short, notched near the apex of their posterior margin, transversely wrinkled at their base, and bordered by a whitish line; nostrils distant, tubular; upper lip with two large tubercles, separated from each other by a groove. Tail short, almost enveloped in the interfemoral membrane, its slender point free: interfemoral membrane notched. In the adult male the neck and breast are rufous, the upper part of the body brown, and the under grey: in the female these colours are modified by a mixture of olive. Inhabits Java and Sumatra.

17. *P. amplexicaudatus*, Geoff.

18. *P. marginatus*, Geoff. The only specimen known to exist is in the Paris Museum. On this the original notice was founded, but it is in too imperfect a state for a detailed description. It has so close an affinity to the *P. titthæcheilus* that M. Temminck has been induced to suspect that it is identical with that species.

This sketch of the characters of the new species of *Pteropus* contained in the fifth number is abridged from the detailed descriptions given by M. Temminck. It is to be regretted that he should constantly abstain from giving in a specific phrase the leading characteristics of each; an omission which is calculated materially to increase the difficulties of the enquirer, and is directly opposed to the practice of the best Zoologists. But a far heavier charge may be advanced against this Monograph. It is indeed a ground of just complaint that of the five *Pteropi* figured, no less



than three should be merely copied from the plates in the *Annales du Museum*. M. Temminck, who declaims so loudly against compilation, ought surely to have had recourse for his illustrations to those ample stores of original materials which he has at his disposal, and which would have supplied him with more than twice the number of yet unfigured species.

The sixth Monograph is devoted to another genus of *Cheiroptera*, the *Dysopes* of Illiger, which is synonymous with the *Molossus* of M. Geoffroy Saint-Hilaire, and also, according to M. Temminck, with the *Nyctinomus* of the latter authour. To establish the identity of these genera, the distinction of which rested only on the number of the incisor teeth of the lower jaw, numerous facts are detailed tending to prove that this character varies according to the age of the individual. Those of the upper jaw are also variable in number, and the dentary formula, as far as the incisors are concerned, may be either  $\frac{4}{6}$ ,  $\frac{2}{6}$ ,  $\frac{2}{4}$ ,  $\frac{2}{4}$ , or even  $\frac{2}{6}$ . The privation of the lower incisors takes place progressively. The base of the canine teeth becomes developed, and by its enlargement the incisors are successively displaced; the projecting lateral points of the canines eventually performing the office of incisors, and being opposed, while engaged in taking food, to the incisors of the upper jaw which are worn away by them. M. Temminck describes these facts as they have been witnessed by him in seven of the eleven species which have fallen under his observation. In order to show the mode of proof adopted by him, we follow him through one of the instances which he has adduced, that of the *Dys. nasutus*, described by M. Isidore Geoffroy Saint-Hilaire as the *Nyctinomus Brasiliensis*. In one young individual of this species there existed, in the lower jaw, six incisors; in another, five, three being on one side, and two on the other; in a third, four only, and in the upper jaw of this specimen, three incisors, with the alveolus, partly closed, of a fourth; in about thirteen other specimens, the number of incisors in the lower jaw was four; and in two full-grown individuals there were only two. The entire absence of even these has been found in the *Dys. obscurus*. Another observation will carry almost beyond the pos-

sibility of doubt the proof of the identity of *Nyctinomus* with *Molossus*. The type of the former genus, the *Nyct. Ægyptiacus*, Geoff., possesses in its early age the four incisor teeth which have been made to characterize the group, but loses two of them, when arrived at its full growth, and thus becomes an undisputed *Molossus*.

On the importance of these remarks we need not observe. The anomalies which exist in the dentary system of the *Cheiroptera* have long been a stumbling-block to Zoologists, and can only be explained by a continued and extensive series of minute examinations, similar to those to which M. Temmiuck has subjected them. They afford an additional proof, if such were wanting, that a system founded on any one set of organs, however important, must become in some of its parts deficient and inadequate: it must degenerate into a merely artificial method, the natural one being attainable only by a well-directed study of the whole organisation.

The species of *Dysopes* are enumerated in the following order; the primary sections, to which no characters can be assigned, being derived from their habitation in the two great divisions of the globe.

\* Species which inhabit the Old World.

1. *Dys. cheiropus*. This is identical with the *Cheiromeles torquatus*, Horsf., and is established on the single specimen which exists in the collection of the East India Company, and was described and figured in the Zoological Researches in Java. No other individual of the species has yet occurred. The description given by M. Temminck was prepared before he was acquainted with that of Dr. Horsfield; his figure is copied from the one published in the work of our able co-operator. M. Temminck does not agree with him in regarding it as the type of a distinct genus. The only character, he remarks, that separates it from the *Nyctinomi* is the opposable nature of the external toe of the hinder feet. An analogous structure, though less in degree, is, in his opinion, possessed by other species of *Dysopes*; the *Dys. velox* has the same toe stronger than the others, free, and articulated laterally; in the *Dys. Ruppelii*, it is free, but is not capable of opposition to the others, nor is it furnished with a broad, depressed nail; and

in the *Dys. tenuis*, the two lateral ones are stronger than the middle three, and possess a freer lateral motion. M. Temminck therefore regards the *Cheiromeles torquatus* as a *Dysopes*, in which this faculty has reached its maximum of development.

2. *Dys. plicatus*; the *Vespertilio plicatus*, Buchanan, Linn. Trans. v. 261.

3. *Dys. Ruppelii*. This new species is allied to the *Nyctinomus Ægyptiacus*, Geoff. Its size is that of the *Vespertilio myotis*. Its ears are extremely large, conchiform, shadowing the face; their internal margin not united, but projecting from the forehead in a common base; a strong internal fold covers the eyes; the base of the ear is furnished with an internal earlet, and with a second external lenticular earlet: the tail is as long as the body only, thick, and depressed, and scarcely one-half of it is enveloped in the interfemoral membrane, which is destitute of muscular fibres: the membranes of the wings are very long and narrow. The fur is abundant, fine, closely-set, and smooth; a broad border of closely-set hairs occupies the base of the wing-membranes, close to, and along, the sides of the body: the nose is covered by black, scattered, diverging, hairs; the lips are broad, pendent, and folded. The upper parts of the body are uniformly mouse-coloured, and the under ones are somewhat paler: the toes are covered with long, rather curved, whitish, silky, hairs; and the external one is somewhat more free than the others. It inhabits Egypt.

4. *Dys. Geoffroyi*: the *Nyctinome d'Egypte* (*Nyctinomus Ægyptiacus*, Geoff.). In pursuance of his declared antipathy to denominations derived from locality, M. Temminck has here again ventured to set aside the original name.

5. *Dys. tenuis*: the *Nyctinomus tenuis* of Dr. Horsfield.

\*\* Species which inhabit the New World.

6. *Dys. rufus*, first indicated by M. Geoffroy Saint Hilaire in the *Annales du Muséum*, and since described by the Prince de Neuwied as the *Dys. perotis*. In size it exceeds the *Vespertilio myotis*; its nose is enormous, very thick and short, resembling in some measure that of the Mastiff: its mouth opens widely: its ears are considerably developed; the interfemoral membrane is

directed in an angular form towards the middle of the tail, the superior half of which it envelopes, leaving the remainder free and without any membranous border: the lips are pointed, and furnished with warty excrescences. The fur of the upper surface is of a deep chesnut colour; that of the under side being paler: the ears and membranes are of a chesnut brown.

7. *Dys. Alecto*. The size of this new species exceeds that of the *Vespertilio myotis*, but the extent of its wings equals that of the *Vesp. serotinus*. The wings are very narrow and are deeply notched: the tail is free for more than half of its length: the membranes extend down upon the tarsi: the breadth of the ears is greater than their height; they are united in front, and are continued in a slender strip towards the nostrils, which are almost united together; the head is short, and is surmounted by a very elevated coronal crest which passes down along the middle of the front. The fur is very fine, resembling a silky velvet, except in the lower and hinder part, where the hairs are long; its colour throughout is a brilliant black: the membranes and face are also black. It inhabits the interior of Brasil.

8. *Dys. abrasus*. Another new species, resembling the preceding in its proportions, but inferior to it in size. The chief distinctions consist, in less than one-half of the tail being free; in the tarsus being unattached by membrane; in the ears being almost as broad as high, and not united in front; and in the nostrils being distant from each other. The fur is very short and closely set: its colour on the upper parts is a very bright and glossy chesnut; on the lower it is paler and more dull: the membranes are black. It inhabits the same districts as the preceding species.

9. *Dys. nasutus*. This is synonymous with the *Molossus nasutus*, Spix, and with the *Nyctinomus Brasiliensis* of M. Isidore Geoffroy Saint-Hilaire.

10. *Dys. velox*. The characters of this species it is unnecessary to repeat as they have been given by Dr. Horsfield at page 237 of our present volume.

11. *Dys. obscurus*: the *Molossus obscurus*, Geoffroy. It may probably be identical with the *Molossus fumarius*, Spix.

The Monograph is terminated by a compiled notice of such

species as M. Temminck has hitherto been unable personally to examine. It includes the characters of the *Nyctinomus acetabulosus*, Geoff. and *Nyct. dilatatus*, Horsf., which inhabit the Old World; and refers to the following, described by authors as having been discovered in the New World: *Dys. ater*, Geoff., *Molosse Mulot-volant*, Daubent., *Molossus fusciventer*, Geoff., the *Chauve-souris châtaine*, obscure, and *brun-cannelle*, of D'Azara, the *Chauve-souris de la Guyane* of Buffon, and the *Dys. acuticaudatus*, Desm. The latter may probably be the type of the genus *Thyroptera*, Spix. To these M. Temminck subsequently adds in his Appendix the *Dinops Cestoni*, Savi, which he suspects to be a species of *Dysopes*, closely allied to his *Dys. Ruppelii*.

Figures of all the new species, except the *Dys. rufus*, accompany the descriptions. There are also given figures of the *Dys. cheiropus*, *Geoffroyi*, *tenuis*, and *obscurus*; the former being copied from the Zoological Researches in Java, and the second from the Description de l'Égypte. Other plates exhibit skeletons of two of the species, and crania of many of them; in the latter the dentary system at various ages is particularly explained.

In his seventh Monograph, M. Temminck proposes a new genus of *Rodentia*, to which he gives the name of *AULACODUS*. It is founded on a single individual of a species hitherto unnoticed. From the very early age of the specimen the generic characters cannot be regarded as fixed; those especially which are derived from the teeth differing of course as the animal advances in growth. The superior incisors are deeply channelled, with two grooves in each of them; the molars are, in this instance, only two on each side in each jaw, and bear some resemblance to those of *Arctomys*: it has no cheek-pouches: there are four toes to each of the feet, the skeleton exhibiting the rudiments of a fifth: the tail is entirely covered with hairs, its length being less than one-half of that of the head and body taken together: and the ears are very large, their external margin forming a complete semicircle, and the conch being furnished with several membranous appendages.

The only species is the *Aul. Swinderianus*. Its size is rather larger than that of the *Hypudæus amphibius*, (Water Campagnol),

which it closely resembles. Its fur is very thick, coarse, and long, resembling that of the Agoutis; the hairs are about an inch in length, and are coloured in successive rings of yellow and deep-brown; hence the upper parts of the body and limbs are variegated with these colours; both the jaws, and all the under surface, are of a uniform yellowish white; the hairs of the tail are brown above, and yellowish below. Its country is yet unknown.

Figures of the animal, of its skeleton, and of various anatomical details connected with it, illustrate the description.

The remainder of the seventh *livraison* is occupied by an Appendix, containing additions and corrections to the preceding parts; a Preface; and a Catalogue of the genera of *Mammalia*. Both the latter merit attention; the former on account of the judicious observations contained in it relative to the abuses which now prevail in the formation of genera and species on insufficient grounds; and the Catalogue for the valuable hints interspersed throughout it. Under each genus the number of species contained in it is stated, as also the doubtful ones; and M. Temminck concludes that full eight hundred and fifty genuine species of *Mammalia* are to be found in our existing collections.

---

*Manuel de Mammalogie, ou Histoire Naturelle des Mammifères ;*  
par R. P. LESSON. 12mo. pp. 442. Paris, 1827.

A neat and convenient little Manual exhibiting the characters, generic and specific, of the whole of the *Mammalia* hitherto noticed. It is compiled chiefly from the *Mammalogie* of M. Desmarest, itself a compilation, the very errors of which are occasionally copied. With this are interwoven the new species which have been described since the appearance of that work, and the number of mammiferous animals is thus raised from 850 to 1124; of which, however, probably one-fourth may be regarded as founded on erroneous or insufficient data. It possesses no novelty beyond that of occasionally elevating to the rank of a genus what had been considered as a species; but is merely to be viewed as a useful

and compendious compilation. Beyond this it makes no pretensions.

It will probably be followed by a Manual of Ornithology by the same authour, uniform, like the present, with an extensive series of Manuals on all subjects of Art and Science, which is now in course of publication at Paris. It is to be hoped that in this and all future productions, M. Lesson will avoid the arbitrary changes of names, and the useless multiplication of species, which disfigure the present.

---

*Atlas de Mammalogie ; Planches lxxx. Paris, 1827.*

A collection of plates designed to illustrate the preceding work, but sold separately.

---

*Systema Avium. Auctor DR. JOANNES WAGLER. Pars Prima. Sm. 8vo. pp. 412. Stuttgardiæ et Tubingiæ. 1827.*

Although perfectly unpretending in outward appearance, this little volume may rank in effect among the most important and desirable that have recently been published. With compilations we have indeed been overwhelmed, but there has scarcely occurred a single work, embracing the whole of any extensive department of Zoology, to which the epithet original could be justly applied. Manuals especially appeared to have become the exclusive property of the mere heaper together, without discrimination and without examination, of the labours of other men. In the present instance the authour has taken a much higher ground, and the plan which he has pursued reflects credit on his judgement and on his industry. He has endeavoured to see for himself the specimens which others had described, and to describe also those which others had not possessed. Into the body of his work he has rarely introduced a species which he has not personally observed, and he has very properly placed it within the power of every one to verify his accuracy, by referring throughout, except in the case of

the more common birds, to the collections in which they are respectively preserved. From these sources he has brought together a very considerable number of species, which he has carefully described and attentively collated with the chief ornithological works. The doubtful species, and those of uncertain location, are appended at the end of each genus, and the distinction is thus strikingly made between those parts of his System for which Dr. Wagler is himself responsible, and those which rest only on the authority of others.

Of this valuable work the commencement alone has yet appeared. It is without arrangement, but a mode of printing is usually adopted which will enable its possessor hereafter to distribute the genera according to his own views of their affinities. At present it may be regarded as a collection of Monographs, forty-six of which, including the extensive genera, *Picus*, *Columba*, *Ardea*, and *Charadrius*, are given in the first part. It is printed in small type, and in double columns, and contains as much matter as would have formed a respectable quarto, if the usual mode of displaying synonyms had been had recourse to. One objectionable practice may be pointed out in the frequent changes of generic appellations which occur throughout it. It is surely better, on all occasions, to employ a name which has been universally received, although it may chance to be inapplicable to some species of a genus, than to create confusion by discarding it and by inventing a new one.

In his *Promium*, Dr. Wagler gives a rapid sketch of the present state of Ornithology, as connected with collections and with the works to which reference is most frequently made. The latter he characterizes with freedom and judgement. He also states that a continuation of his System will appear almost immediately, and that he has ready for publication a natural history of Birds, in which he proposes to explain his views relative to their arrangement and affinities.

---



*American Ornithology; or the Natural History of Birds inhabiting the United States, not given by Wilson. With Figures drawn, engraved, and coloured from Nature. By CHARLES LUCIAN BONAPARTE. Vol. i. Folio, pp. 106. pl. ix. Philadelphia. 1825.*

A CONTINUATION of the splendid work of the zealous and indefatigable Wilson, by an equally acute observer of nature. In style, in execution, and in illustrations, it is similar to the original publication of which it is intended to complete the series. Both the one and the other are favourable specimens of American art, and in the continuation the engraver has even surpassed his former spirited productions. The present volume is devoted to the Land-Birds, of which twenty-two are figured and described. Their habits are detailed, where they are known, at considerable length, especially those of that peculiarly interesting species, the Wild Turkey. Not one of the birds which it notices is found in Pennsylvania, which was the peculiar district of Wilson, and by whom it seems to have been exhausted to the very gleanings. They have universally been obtained from the more distant regions, and chiefly from the Rocky Mountains. For an account of several other birds, which were still additional to the American Fauna, our readers will recollect that we have been indebted to the same able ornithologist, in the two preceding numbers of our Journal.

---

*Observations on the Nomenclature of Wilson's Ornithology. By CHARLES LUCIAN BONAPARTE. 8vo. pp. 232. Philadelphia. 1826.*

OF the high utility and value of this necessary Appendix to Wilson's admirable production we have already spoken, while noticing several of its parts, as they successively appeared in the Transactions of the Academy of Natural Sciences of Philadelphia. We need not therefore now repeat our commendations. It will be sufficient to express our gratification at finding that the scattered

papers, in which was contained so much important information, have been collected into a volume, and have thus been rendered more easily accessible. Devoted expressly to the correction and revision of the Nomenclature of the American Ornithology, its leading object is to place that standard work on a level with the actual state of science. With this view the Synonymy is enlarged and continued, so as to embrace the latest observations. Its acquisition is consequently essential to the possessors of the original work. To the general ornithologist it will also be desirable on account of the numerous and just observations with which it is interspersed, relative to the arrangement of birds, and to the value of the groups into which they have been divided.

---

*Atlas des Oiseaux d'Europe, pour servir de complément au Manuel d'Ornithologie de M. Temminck : par J. C. WERNER, Peintre d'Histoire Naturelle. 8vo. Livraisons i—v. Paris, 1826.*

THE commencement of a cheap, but not inelegant, collection of lithographic figures, of the whole of the European Birds described by M. Temminck. As applied to ornithological subjects lithography has not yet attained that neatness and perfectness of delineation, with which it depicts the objects of some other branches of Zoology, especially shells. Uncoloured, the figures of M. Werner would appear but indifferent; but, with the finish given to them by the colourer, they are quite sufficient to enable the student to distinguish species. The plates are published in the order pursued in the work which they are intended to illustrate. The first five numbers extend to page 112 of the *Manuel d'Ornithologie*, and comprehend 49 figures, each on a separate page, besides two which are devoted to skeletons of birds of the first two Orders, the Predaceous and the Omnivorous. It will be desirable, we think, to give also with each Order, one or more additional plates, for the development of the characters of the genera contained in it.

It may be useful to mention, that, owing to the higher scale of duty to which prints are subjected, the *Atlas* may be had in England with the letter-press of the *Manuel*, on the same terms as without it.

---

*Birds of America, from Drawings made during a residence of upwards of twenty-five years in the United States and its Territories: by J. J. AUDUBON. No. 1.*

ONLY one number of this immense undertaking has yet appeared: immense indeed, since with the view of figuring every bird in its natural dimensions, a size of paper is employed so large that we know not how to designate it. Some idea of it may be formed from the fact that the full grown Wild Turkey is contained in one of the plates already published. They are executed in a high style of art, and are so beautifully coloured as to become not merely subjects for the study of the naturalist, but also ornaments for the most select port-folio or the drawing-room.

---

*Illustrations of Ornithology: by SIR WILLIAM JARDINE, Bart., F.R.S., &c.; and P. J. SELBY, Esq., F.L.S., &c. Parts i. and ii. Royal 4to. Plates.*

To these earliest numbers of a work, which has been undertaken as a national one, with the cooperation of representatives of most of our scientific Institutions, we propose to return when our limits will afford us sufficient space to do justice to their contents.

---

*Illustrations of British Ornithology: by P. J. SELBY, Esq., F.L.S., &c.—Water Birds. Nos. ii. and iii. Folio.*

THE approaching termination of this magnificent work will shortly, we trust, put it in our power to speak of it as a whole, complete and almost perfect. Till then we defer our notice and the commendations which it imperatively demands.

*Ornithologia; or The Birds. A Poem.* By J. JENNINGS. 12mo.  
London, 1827.

OF the Poem, as it is termed, we need not speak; the notes embrace the whole of the science of this attempt at a popular illustration of one of the most attractive departments of Zoology. They are well compiled, and convey much valuable information. We would only suggest that in reading them the attention should be directed entirely to the facts which they contain, and by no means to the explanations given by Mr. Jennings of the scientific views of higher naturalists, which in some instances he evidently does not comprehend.

---

*Illustrations of British Entomology; or a Synopsis of Indigenous Insects: by J. F. STEPHENS, Esq., F.L.S., &c. Nos. i—viii. With Plates. 8vo. London, 1827.*

TO the extent and accuracy of the knowledge of our native Insects possessed by Mr. Stephens the united voice of British Entomologists has long borne testimony. His cabinet stands unrivalled in number of species and of specimens, and affords in its extreme richness the best opportunity of well illustrating that vast department of our Fauna to which the attention of its owner has been for years almost exclusively directed. Mr. Stephens has also collected zealously and extensively, and has thus made himself practically acquainted with the manners and œconomy of the objects of his study; and he is moreover well versed in the works of those authours who have specially applied themselves to the elucidation of the Natural History and Species of Insects. From the pen of such a man we are entitled to expect a standard and valuable work, adapted to the present advanced state of the science, and calculated to fix the unsettled ideas and nomenclature which had prevailed so extensively among us.

Our expectations are not deceived; though they would undoubtedly have been more fully and more speedily gratified had

the authour confined himself to a purely scientific *Species Insectorum Britannicorum*. With so much of his present work as could fairly have been included under such a title we confess our unmixed satisfaction. The species, so far as the Illustrations have yet proceeded, are carefully characterized; and, where necessary, minutely described; their differences are explained; their œconomy and the situations in which they are found are pointed out; and the localities, in which the rarer ones have occurred, are particularized. Many of the more interesting are figured, and the engravings are respectably executed. The work is in fact indispensable to all who are attached to the study of British insects, and may safely be recommended to them as deserving of their encouragement. Acuteness of discrimination forms its most prominent characteristic; and if the subdivision of genera and species be occasionally carried to an extent greater than to some Entomologists would have seemed desirable, the practice is fully borne out by the example of those moderns whose productions are looked up to with almost universal respect.

If we were to complain of any portion of the work, it would be that its authour had done too much rather than too little. The diffuseness, sometimes approaching to disquisition, of remarks which in a work of this nature can only be regarded as incidental, occupies unnecessarily too large a proportion of the pages which might be devoted to much better matter. We trust that this will be abridged, and that some plan will be adopted for giving in a more concise manner the information relative to localities. Conciseness in fact is essential; and the want of it would be fatal to our hopes of obtaining from Mr. Stephens that vast body of information which he alone can impart to us, as it is possessed by no other individual. On the plan with which the work has commenced few individuals now living can expect to witness its conclusion: but let brevity, the clear, precise, and elegant brevity of the great master of Natural Science be studiously cultivated, and a very few years would place within our reach the means of becoming thoroughly acquainted with the most extensive and numerous series of animal existences which give life to our favoured country.

There is one deficiency, a most important one in truth, but on which we shall touch but slightly, trusting that it will speedily be remedied: the total want of synonyms. We are aware that Mr. Stephens proposes to supply this defect in a general Catalogue in which the necessary references will be given. No time should be lost in producing such a publication; for, until we possess it, no one number of his present work can be regarded as complete, since we have it not placed in our power to refer from it to the works of others.

The *Coleoptera* and the *Lepidoptera* have been first selected for illustration as the most extensive and generally interesting orders of the *Mandibulata* and the *Haustellata*. A portion of each of them is given in every number.

---

*Die Schmetterlinge von Europa. (Fortsetzung des Ochsenheimer'schen Werks,) von FRIEDRICH TREITSCHKE. Funfter Band. Erste und Zweyte Abtheilunge. 8vo. pp. 414, and 447. 1825.*

THIS continuation of the extensive work of the departed Ochsenheimer, on the *Lepidoptera* of Europe, is equally deserving of commendation with the volumes which appeared during the life of its original authour. It completes the *Noctuæ*, L., of which about fifty genera are described, and commences a synopsis of the *Geometræ*, L. Many of the genera are new, and many novel species are also added.

---

*Histoire Naturelle des Lépidoptères ou Papillons de France; par M. J. B. GODART. Continué par M. P. A. J. DUPONCHEL. Tome vii. 1<sup>ere</sup>. partie. 8vo. Planches.*

A PORTION of an excellent work on the *Lepidoptera* of France, which has been for several years in a course of publication. The descriptions are faithful, and the plates are admirably executed. It has yet advanced no further than *Noctua*, L., the last number which has reached us being occupied by the genera *Apamea*, and *Mamestra*, Ochs.

*Systematische Beschreibung der bekannten Europäischen Zweiflügeligen Insekten: von J. W. MEIGEN. Fünfter Theil. 8vo. pp. 412. Plates xiii. Hamm, 1826.*

HAVING already noticed an earlier portion of this valuable *Species* of the European *Diptera*, it is unnecessary to repeat the praises which we then bestowed on it, and which this volume merits as fully as its predecessors. It contains the continuation of the family *Muscides*, and embraces thirty-nine genera. Some of these are very numerous in species, *Anthomyia*, for instance, of which alone two hundred and thirteen are described. Particular attention has been paid to the genera *Trypeta* and *Ortalis*, figures being given of the beautifully marked wings of many of the insects belonging to each of them. The plates are well filled with illustrations of the generic characters. The number of species described in the volume exceeds six hundred.

Under this head we may also notice another work which is mentioned in its preface, but which we have not yet seen. It is entitled "Ausseuropäischen Zweiflügelin," and is from the pen of M. Wiedemann. It forms a kind of supplement to the work of Meigen, on whose system it proceeds, being intended to comprise the extra-European dipterous insects. One volume only has yet appeared, which contains nine families, and about six hundred species.

---

*Insecta Suecica descripta à LEONARDO GYLLENHAL. Classis 1. Coleoptera sive Eleuterata. Tomi i. Pars iv. Lipsiæ 1827. 8vo. pp. 761.*

The long expected conclusion of the excellent descriptions of the Coleopterous Insects of Sweden by the minute and patiently investigating Gyllenhal. It contains only the *Cerambycidæ*, the *Trimeræ*, and the *Dimera*. The remainder, or rather the bulk, of the volume, forms an appendix to the preceding ones, in which the synonyms are brought up to the time of publication, and new

species, and species new to Sweden, are added to those previously described. Additional observations are also occasionally given as to the times of appearance, localities, discriminating characters, &c. It concludes with a full Index to the whole work.

The extreme accuracy and precision of detail which characterize the former volumes are here fully sustained. Minuteness of investigation is carried to its greatest extent. Even varieties are scrupulously examined and collated. Of *Coccinella 2-punctata*, for instance, no less than 22, and of *Cocc. variabilis*, 30, varieties are severally noticed.

---

*Catalog meiner Insecten-Sammlung, von Jacob Sturm. Erster Theil. Käfer. Nürnberg, 1826. 8vo. pp. 207. pl. iv.*

THIS Catalogue of the collection of *Coleoptera*, in the possession of the respected entomologist Sturm, is a manifest improvement upon that of the Count Dejean. It not only exceeds the latter in the numerical amount of species contained in it, 7193, but also gives an arranged list, accompanied with observations, of the 531 genera into which they are divided, and furnishes detailed descriptions and figures of forty new Insects. By the title it is evidently the intention of the authour to continue his Catalogue throughout the other Orders, and thus to form a work of real and increased utility, and one which is at present a great desideratum in Entomology.

---

*The Honey-Bee; its Natural History, Physiology, and Management: by EDWARD BEVAN, M.D. 12mo. pp. xxviii. and 404. London, 1827.*

FROM every source, ancient as well as modern, from his own experience, and from that of his friends, Dr. Bevan has collected the materials for his instructive and entertaining little volume,



with an industry and taste almost equal to that of the intelligent little insect which forms its subject. He enters with sufficient detail into the natural history and management of Bees, and, while treating of their organisation and instinct, diverges to more general views as connected with the whole of the class to which they belong. The pleasing manner in which the facts are narrated, and the frequent illustrations introduced by means of neatly-executed wood-cuts, render it altogether a very attractive production. Calculated at once to interest and inform, it will doubtless become extensively popular, especially among the more respectable class of Apiarians.

---

*Histoire Naturelle des principales Productions de l'Europe Méridionale, et particulièrement de celles des Environs de Nice et des Alpes Maritimes ; Par A. Risso, Ancien Professeur, &c. 8vo. Tomes i.—iv. Avec des Planches. Paris, 1826.*

A WORK of high value, as the production of an able and practical naturalist on the objects which immediately surround him, and to which his attention has been especially directed, throughout a long series of years. Its contents embrace the whole of the departments of Natural History as connected with the district in which the authour resides, but our notice will of course be directed to its Zoological portions alone. These occupy a considerable share of the volumes, and are well adapted to maintain for M. Risso the character which he has acquired by his previous works, that of an acute and intelligent observer.

In the first volume Zoological subjects are only incidentally introduced, in the Geological Sketch of the environs of Nice, which occupies nearly one half of its pages: but the contents of the fourth volume are entirely and purely Zoological. They consist of a sketch of the natural history of the *Mollusca* and Shells of the district of Nice, and of a series of observations on different *Annelida* of the Maritime Alps. In the former, including the *Cirrhipeda* and the *Tunicata*, 1085 species are characterized and

described ; many of these are however found only in the fossil state, and have been already admirably illustrated by Brocchi. The novelties are very numerous, and 183 of them are well figured in the twelve plates which accompany the volume. In the discrimination of genera M. Risso has laboured hard, having added to those of his predecessors, which he has adopted in their most restricted signification, upwards of fifty new ones. Of these several are established from the MSS. of our respected and talented countryman Dr. Leach. Where subdivision has once been carried to the extent which is now almost universally received among Conchologists, we are aware that consistency almost requires that it should be had recourse to even still more freely ; but we fear that our authour has here advanced with too rapid a stride. The genius of the age will scarcely keep pace with him, and Nature herself, we apprehend, will not uniformly agree with his conclusions. The points on which he founds his generic distinctions are, in our opinion, frequently too minute ; in some instances he appears even to have created a genus from a young shell, which, in its perfect state, is referred to an older and received division. We speak with little doubt on this point, although we have not the specimens before us, by which alone our opinions could be verified. An opportunity of determining their accuracy will however be afforded to the Conchologists of Paris, to the museum of which city M. Risso states his intention of forwarding specimens of all his new species : an admirable plan, the general adoption of which would prevent the endless confusion that results from the want of original types, ticketed by the authours themselves, of the objects indicated by them.

The *Annelida* described amount to eighty-two, including three new genera.

---

*Catalogue Descriptif et Méthodique des Annelides et des Mollusques de l'Ile de Corse; avec huit Planches représentant quatre-vingt-huit espèces, dont soixante huit nouvelles: par B. C. PAYRAUDEAU. 8vo. pp. 218. Paris, 1826.*

Appearing almost at the same time with the work of M. Risso, which we have just noticed, it is impossible not to remark the poverty of the present list, when compared with the ample one furnished by the Professor of Nice. The collection of *Annelida* and *Mollusca* formed by M. Payraudeau amounts to only three hundred and fifty-six species. It was however made during a mere, though somewhat lengthened, visit, and could not, of course, be expected to approximate in extent to one which had been the labour of a life. The present production is little more than the Catalogue which it professes to be. For those species which are contained in the *Histoire Naturelle des Animaux sans Vertèbres*, it merely quotes that standard work of M. Lamarck, with the addition of the synonyms of the later English writers. The new species are shortly, but clearly, described; and the whole of these, together with some of the more intricate of the older ones, are illustrated by well executed lithographic figures. No new generic section is proposed.

A leading object with M. Payraudeau appears to have been to place the French Conchologist on equal grounds with the English, as to the knowledge of the shells of their respective coasts. Those which occur in England and on its shores are thoroughly known, and have been well and repeatedly described. France yet possesses no work devoted to her indigenous *Mollusca*, and we have consequently, in this department at least, advanced far before our neighbours. The examination of any good English collection would have materially improved the publication before us. It would have rectified many of the synonyms, which are now given erroneously, and would have spared the author the trouble of describing and figuring as new, in several instances, shells already described and figured by Montagu, Donovan, and others.

---

*Synopsis of the Newcastle Museum, late the Allan, formerly the Tunstall or Wycliffe Museum.* By G. TOWNSHEND FOX, Esq. F.L.S., &c. 8vo. pp. xxii. & 312. Plates. Newcastle, 1827.

A catalogue of the contents of a miscellaneous, but respectable, provincial collection, the Managers of which appear to be actively engaged in promoting its increase. Among the zoological lists, which occupy the larger portion of the volume, that of the British Birds is the most extensive; and it is rendered valuable by the practical information conveyed by the notes appended to each species, which are chiefly extracted from the manuscripts of Mr. Allan. The foreign lists are generally scanty. The only zoological plates exhibit figures of the *Wombat*, and of the *Tetrao medius*, Meyer. In the account of the former animal the editor condenses the greater part of the information which we possess relative to that confused species. His notes, which are interspersed throughout the volume, are instructive, and, in one instance, while treating of the very interesting question relative to the nature of the Unicorn, extend almost to the length of an Essay. Like the collection itself, its illustration by Mr. Fox is highly creditable.

---

*A Manual of Comparative Anatomy, translated from the German of J. F. Blumenbach, with additional Notes by W. Lawrence, F.R.S., &c. Second Edition, revised and corrected by WILLIAM COULSON, Demonstrator of Anatomy, &c. 8vo. pp. liv. & 380. pl. viii. London 1827.*

The second English edition of an elementary work universally and justly esteemed. To the first translation into our language were appended by the excellent anatomist who edited it illustrations and notes almost equal in extent to the original text. Of these the bulk have been adopted by the authour into the later German editions, an indisputable proof of the value of Mr. Lawrence's additions. In the present edition the whole of these

are preserved, and are blended, though in a different type, with those portions of the text to which they refer. Other additions have now been made by Mr. Coulson, chiefly from the productions of the more recent writers on comparative anatomy, and the Manual is thus again brought before the public in an improved form, at once creditable to its editor, and to the country into the language of which it has never been translated without acquiring increased value by the transfusion. Like the whole of Blumenbach's elementary works it may be safely recommended to general perusal.

---

*An Introductory Lecture on the Study of Zoology, delivered at the Literary and Scientific Institution, Bath: by HENRY WOODS, Esq., Hon. Sec. 8vo. pp. 92.*

A POPULAR and well-executed sketch of the history of our Science, accompanied by an exposition of its utility and objects. The inducements to its study are briefly and clearly pointed out, and the chief objections against it satisfactorily answered.

## EXPLANATION OF THE PLATES.

---

		PAGE
PLATE IX.	<i>Fig. 1.</i> Antennarius unicornis .....	374
	<i>Fig. 2.</i> ——— nitidus .....	375
	<i>Fig. 3.</i> Perca pulchella .....	377
PLATE X.	Polybrachionia Linnæana .....	404
	<i>Fig. 1.</i> Animal pronum auctum.	
	<i>Fig. 2.</i> ——— supinum.	
PLATE XI.	<i>Fig. 1.</i> A Fossil Jaw in a fragment of the Stonesfield Slate .....	408
	<i>Fig. 2.</i> The Jaw detached and magnified.	
	<i>Fig. 3.</i> The second molar tooth magnified.	
PLATE XII.	Felis planiceps .....	450

THE  
ZOOLOGICAL JOURNAL.

January—April, 1828.

---

ART. XLIX. *Notes on the habits of a Caryophyllia from Tor Bay, Devon. By H. T. DE LA BECHE, Esq., F.R.S., F.L.S., &c.*

[To the Editor of the Zoological Journal.]

SIR,

SHOULD the following notes made by me in the neighbourhood of Torquay, while investigating the geological structure of that part of Devon, be thought worthy of a place in the Zoological Journal, you will oblige me by inserting them.

I have the honour to be, Sir,

Your obedient Servant,

H. T. DE LA BECHE.

---

1827. *April 24.* I obtained three specimens of *Caryophyllia* from the bay. One of these was of a pale green colour; the other two of a brownish red. All remained closely contracted within their radiated cups during the day. In the evening, after dark, the pale green one had expanded all its tentacula, its body was so much protruded that the cup was concealed, and it had, altogether, the appearance of a common pale green *Actinia*. The white orifice of its sac or stomach was closed. Upon dropping five or six eggs of the common Prawn upon it, it gradually closed a few of its tentacula over them, then opened the mouth of its sac,

and swallowed the eggs. The orifice being closed, it again expanded its tentacula, and had, at first, much the same appearance as it had before the eggs were offered to it, excepting that the sac seemed replete and protruded: but, after the eggs had been swallowed some little time, the tentacula became more elongated. Shortly after this it closed itself up. One of the brownish red specimens had so plumped itself out as to conceal the cup, the orifice of the sac and the points of the tentacula being visible. Upon presenting some of the Prawn eggs to this individual, it managed to open the orifice of the sac and swallow them, without extending its tentacula.

The other brownish red individual remained sunk in its radiated cell, and would not swallow the eggs offered to it.

*April 25.* The two brownish red individuals sickly. The green one was partly expanded in the morning; but, on giving it fresh water, it collapsed. It, afterwards, expanded itself, holding its tentacula in a nearly vertical position. When expanded, these animals do not appear to have much power of motion in the tentacula, which are, however, capable of contraction and elongation. They are nearly transparent except at the termination, which is a little ball, white and opaque.

In the evening the green one was fully expanded. Upon placing a small piece of fish (Haddock) in such a position as to touch two or three of the outer tentacula, it was immediately caught up by those; and, by bringing the neighbouring tentacula to bear on it, the animal conveyed the piece of fish to the orifice of its sac. Then, after covering the whole with all the tentacula, it opened the sac and conveyed the piece of fish into it. It was some time before it had closed the orifice over the morsel, but when it had effected this, it partially expanded the outer tentacula, the more internal tentacula remaining much contracted. It then pursed up the orifice into a kind of ball shape, and the interior of the sac appeared of a pink colour, as if some small vessels were distended with a kind of blood during digestion.

*April 26.* The green individual was expanded in the morning, and, upon presenting it with a piece of fish (Haddock), it went through the same manœuvres as marked its repast yesterday, and



presented the same appearances with the exception of a greater elongation of the tentacula. One of the brownish red specimens was now dead : the other remained sunk in its cell. The latter being protruded in the evening, I presented it with a small piece of the common sand shrimp, which it conveyed into its sac much in the same manner as the green individual did. It, afterwards, pursed up the orifice, which became of a somewhat deep coloured brown pink.

The green individual was fed with a small piece of shrimp, and exhibited the same mode of feeding as it did before.

On this day I procured three other individuals : they were all tinted of a brownish red.

The brownish red individual first captured now seemed to be greatly revived by the food which it had swallowed ; the tentacula being expanded, and the animal generally in a plump state : I offered it another piece of shrimp, which it swallowed in the usual way, and became much plumped out, more particularly about the sac, the mouth of which was curiously pursed up. The green individual was also much plumped out.

The three newly captured individuals were nearly sunk in their cells : each, however, contrived to swallow the little piece of common sand shrimp offered to it.

Sharland, the man who procured these corals, told me, that Mrs. Griffiths found them alive in Tor-bay about three years since : he gave me the following account of their localities and habits. They are always found under large stones, or the under parts of ledges of rock, with their orifices and tentacula downwards. They are only met with at low spring tides, and are usually discovered at the Corbons Rocks, at the end of Tor Abbey Sands. They do not occur in groups, but scattered.

*April 27.* The green individual, and the reddish brown one first captured, continued expanded nearly the whole day. Upon presenting each of them with a small shrimp, they soon conveyed the shrimps into their respective sacs. The reddish brown one turned its shrimp upon its back by means of its tentacula, before it swallowed it : this was, perhaps, accidental, for the green individual swallowed its shrimp sideways, in such a manner that the tail re-

mained protruded. This state of things, however, the animal soon rectified, by twisting the tail with two or three of its tentacula in such a manner, as to cause it to enter the orifice of the sac more easily.

I should not have supposed these creatures capable of swallowing a crustaceous animal so large in proportion to themselves as a shrimp.\*

*April 28.* Both individuals had voided the crustaceous parts of the shrimps, having digested all the fleshy parts, and were more collapsed than usual to-day.

*April 30.* I fed the corals with pieces of the common small Hermit crab, which they conveyed into their sacs in the usual manner. The greenish individual had much trouble to squeeze in the eyes and hard crust of the head. The sac appears capable of great extension, and has, probably, much muscular power. Although the piece swallowed was large, the animal presented only the usual pursed up appearance afterwards.

*May 2.* Abstinence does not appear to agree well with these creatures, though one would suppose that, in their natural state, they must often remain long without food. The green individual had sunk so low into its cell, that the sharp edges of the laminæ were scarcely covered, and I, at first, thought that it was dead. But, upon presenting a piece of cockle to it, it gradually raised the orifice of its sac, and after some time, the whole piece was enveloped. It did not, however, even then, put forth its tentacula.

The reddish brown individual was not sunk into its cell; though the tentacula were not fully developed. It managed the piece of cockle presented to it in the usual way.

*May 3.* In order to try the gluttony of these animals, I fed each with a large piece of cockle, and each of them managed to convey its portion into its sac, though they were unable to close their orifices. The reddish brown, after a short time, rejected the piece from its sac. After letting it remain for a short time quiet,

\* I have frequently watched the *Actinix* at Dawlish, in Devonshire, with their tentacula expanded, and observed how surely they entangled the young crabs, which heedlessly ran within their reach.—W. J. B.

I offered it a smaller piece of cockle, which it soon swallowed and covered up, by closing the orifice of the sac.

The greenish individual did not reject its morsel, but retained it partly out for some time. There seems to be a great compressing muscular power in the sac, for, after an hour's labour, the individual succeeded in enclosing the piece of cockle, which was comparatively of large size. The complete shutting of the sac may perhaps be necessary to the perfect digestion of the food.

Both individuals had the mouths of their sacs open before I fed them.

During the time the green individual was compressing the piece of cockle, its tentacula were much shortened.

I kept these animals alive for about a month; but, as I observed nothing new in their habits, they were killed in order to preserve their calcareous cells.

#### NOTE.

In the first volume of Leach's Zoological Miscellany, a figure (plate 59) is given of the Mediterranean species of *Caryophyllia* (*Car. Cyathus*). At page 133 the soft parts of the genus are thus characterized: "ANIMAL tentaculis plurimis carneis, teretibus, simplicibus, integris. Dom. T. Smith:" and, in the same page, the following passage will be found. "For the discovery of the animal of this genus of corals we are indebted to the attentive researches of Thomas Smith, Esq., F.L.S., of Paper-buildings, Temple, who observed an indigenous species of *Caryophyllia* on the southern coast of Devonshire, adhering to a rock in a pool of water." The hard parts of this indigenous species do not appear to have been any where described, nor have we been able to find any figure of either the hard or soft parts, unless indeed figures 5 and 6, tab. 82, in the 3d volume of Muller's Zoologia Danica, owe their origin to one of these corals with the soft parts in the cell. The likeness is great, and though Muller describes the figures as those of an *Actinia*, it is clear that he never saw the specimen itself. He thus describes *Actinia Iris*, for which he refers to the above-mentioned figures in the third page of his third volume.

"*Actinia corpore cylindrico, rugoso, tentaculis numerosis, simplicibus, cylindricis, obtusis, exterioribus rufis, interioribus cæruleis, centro albido.*

*Actinia* hæc parvula, quam non vidi, varietas forsan est *Actiniæ* equinæ, a quâ, cum ad parvitatem non respiciendum sit, vix distinguitur, nisi circulo tentaculorum interiorum cæruleo."

It will be observed on reference to Dr. Leach's generic character, that he makes the double series of plates a principal ingredient in his definition. Lamarck does not; and he assembles under this genus a number of species which differ entirely in this respect, as well as in other respects, from his first species, *Car. Cyathus*. Mr. Stokes therefore proposes to separate those species

which have only a single series of plates, from *Caryophyllia*, which may be characterized thus:

## CARYOPHYLLIA.

Char. Gen.

Polyparium simplex, basi affixum. Corona laminis duplici serie dispositis, exterioribus majoribus, regulariter inæqualibus, maximis inter seriei internæ laminas interpositis. Discus lamellis erectis, prominulis, foliatis.

Type. Car. *Cyathus*.

The genus *Caryophyllia* thus modified contains two recent species\*, *Car. Cyathus*, and the species, the habits of which form the subject of this interesting memoir, and which, in justice to the memory of the much regretted naturalist who first characterized the soft parts, it is proposed to name

## CARYOPHYLLIA SMITHII. n. s.

*Car. laminis sub-integris, plicatis, marginibus leviter crenulatis; laminis exterioribus valde inæqualibus, laminis minoribus tribus inter altiores interpositis.*

TAB. XIII. f. 1—6. Mus. Stokes, De la Beche.

OBS. The plates of the inner series in *Car. Smithii* are thinner and broader than those of the same series in *Car. Cyathus*.

On looking down with a magnifying glass upon the lamellæ which form the papillæ in the centre or disc of *Caryophyllia*, indications of a spiral structure were perceived. This induced Mr. Stokes to make a longitudinal fracture of a specimen of *Car. Cyathus* in my presence, when the screw-shaped roots of these lamellæ were seen running up the centre of the coral parallel to each other.

\* It will probably include also the *Car. Europea* and *Car. pygmæa*, Risso, (*Hist. Nat. de l'Europe Mérid.*;) but the double series of lamellæ is not noticed, and the figure of the former is not sufficiently defined to decide the point.

W. J. BRODERIP.

ART. L. *Contributions to the British Fauna.* By GEORGE JOHNSTON, M.D., *Fellow of the Royal College of Surgeons of Edinburgh.*

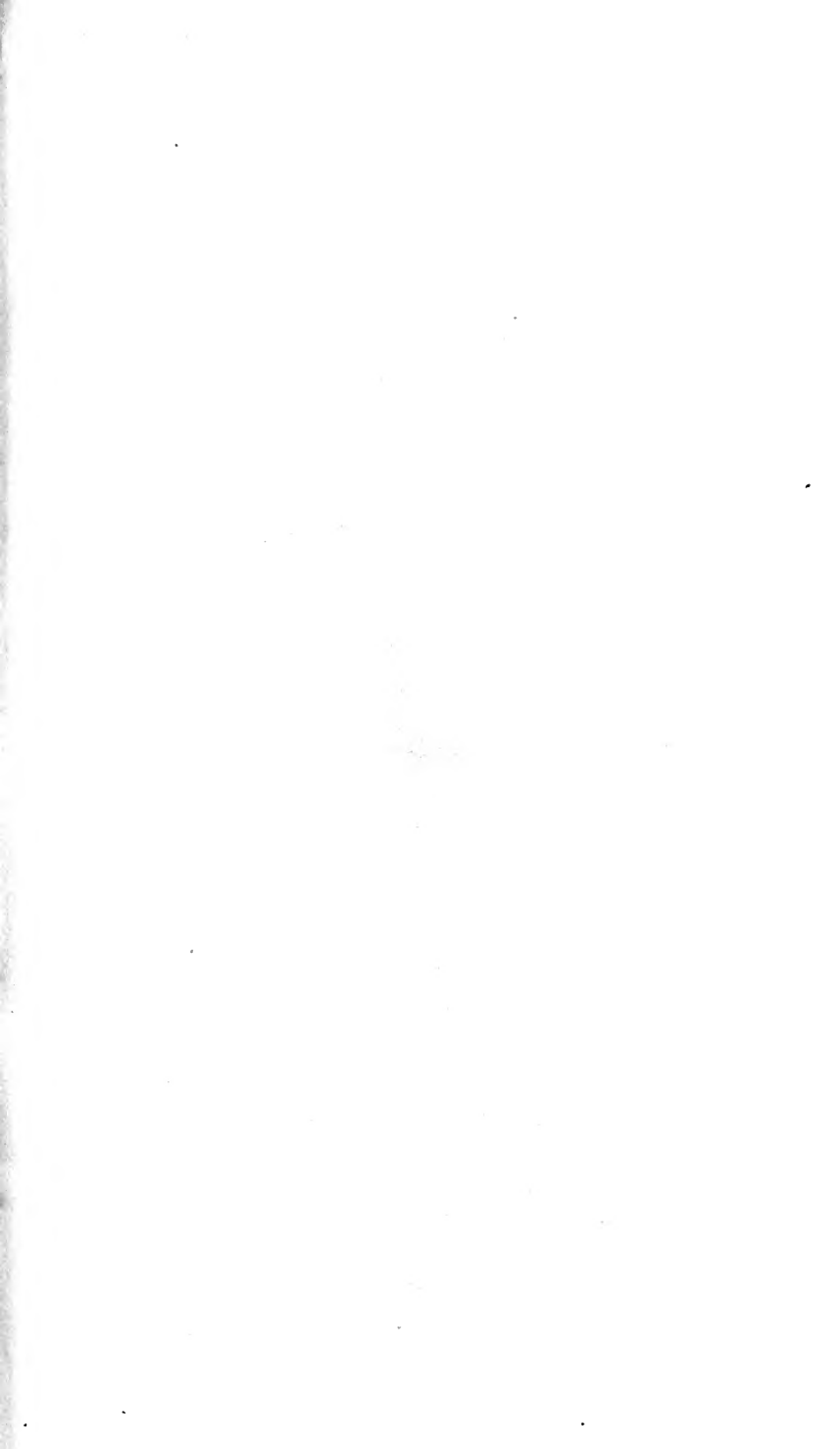
Class. ANNELIDES. Lamarck.

Fam. NÉRÉIDÉES. Id.

Gen. SPIO. Id.

1. SP. VIRIDIS.

DESC. *Body* three or four inches long, as thick as a goose quill, subquadangular, tapered a little towards both ends, of an uniform dull grass-green colour, or brownish towards the tail.



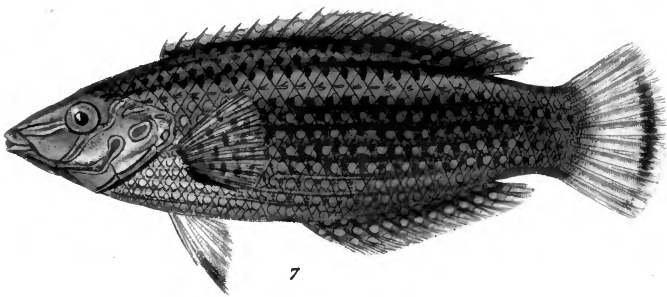
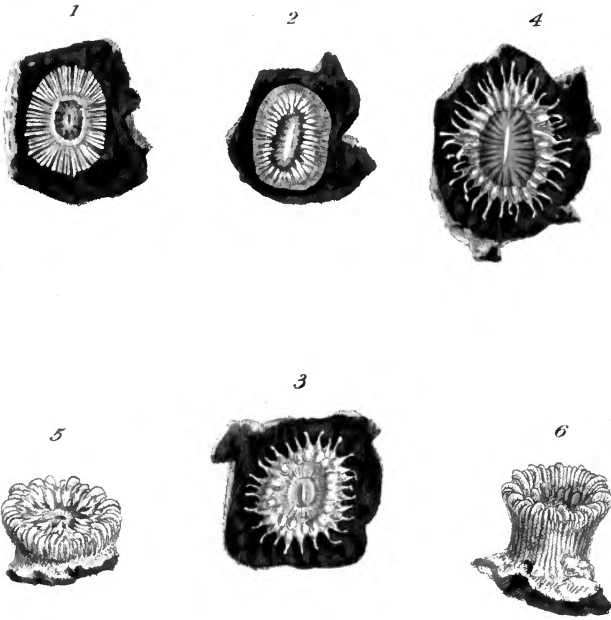
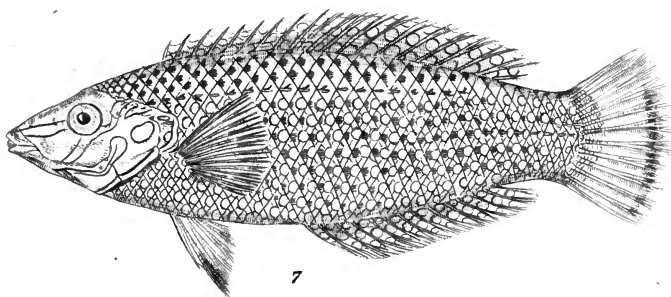
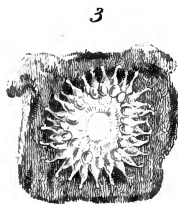
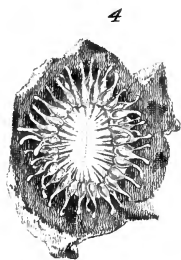
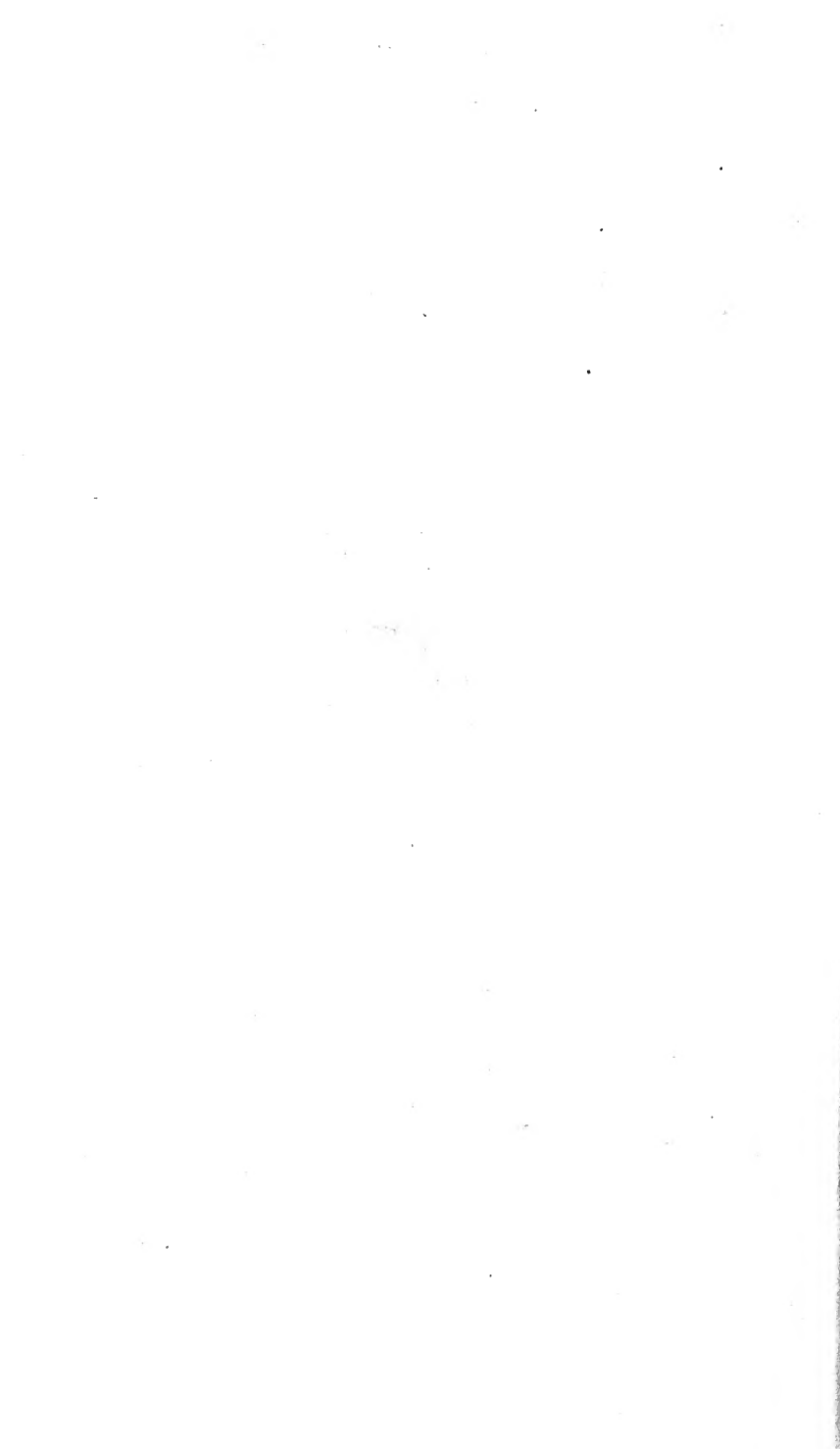


Fig. 1-6. *Caryophyllia Smithii*. p. 486.  
" 7. *Julis Argus*. p. 577.







*Head* probosciform, irregularly conical, pointed, light brown. No eyes, nor proboscis. *Mouth* inferior. *Tentacula* two, one inch long, filiform or slightly tapered at the point, white with a red central tortuous vessel, contortile. *Branchiæ* in a single row along each side of the back, bright red, setaceous, non-retractile, either elevated or laid across when the points of the opposite hairs meet. At the base of each there is a small fascicule of soft white hairs which appear to be also non-retractile. Below these, and divided from them by a line, there is to each segment an elevated transverse fold, continued round the ventral surface to the fold of the opposite side by a less elevated and narrower line. These folds are armed with short white retractile bristles on the margin, and when examined with the glass are seen to be beautifully mottled with close-set round spots. *Tail* stellate.

This fine species inhabits the same places as the *Spio vulgaris* which we have described in a preceding contribution, but is much less common. A comparison of the descriptions will at once shew that they are quite distinct; and their specific characters may be thus expressed.

1. *Sp. vulgaris*. *Body* yellowish brown, marked with the red setaceous branchiæ: head inversely triangular; eyes four; tentacula much shorter than the body.

2. *Sp. viridis*. *Body* green minutely spotted with circular dots; no eyes; head conical; tentacula much shorter than the body.

This last character is introduced since it serves to distinguish both species from the *Sp. seticornis* in which the tentacula are said to be nearly as long as the body. I cannot refrain from remarking how admirably the structure of these worms is adapted to enable them with ease and velocity to ascend and descend in the deep holes which they inhabit.

---

Class. VERMES. Lamarck.

Ord. MOLLASSES. Id.

Gen. PLANARIA. Linn.

This is a very heterogeneous genus, the receptacle at present of all soft external worms. The three species we intend to describe

are placed here merely because we know of no other group to which they can be so properly referred.

1. PL. FLACCIDA.

1. *Pl. elongata, depressa, brunnea, subtus albida: oculis nullis.*

*Pl. flaccida. Lamarck, iii. 178.*

*Fasciola flaccida. Muller, Verm. i. pt. ii. p. 57.*

*Hab.* The sea, near Berwick.

*DESC.* *Body* five inches long, about four lines broad, and one in depth, flat, a very little narrowed at both extremities which are alike, opaque, of a firmish consistence but very glutinous. The *back* is of an uniform brown colour; the *ventral surface* of a faint flesh colour or nearly white. *No eyes.* *Mouth* and *anus* terminal. From the former we could not evolve any proboscis.

We found two specimens of this species lying coiled up in the cavities of a stone perforated with the *Saxicava rugosa*, and which had been dredged from deep water. They were exactly alike; and though they differed in some slight particulars from the description of Muller, yet these were not sufficient to induce us to quote his synonyme with any doubt.

2. PL. UNICOLOR.

2. *Pl. elongata, linearis, mutabilis, brunnea, unicolor; ore albo.*

*Hab.* The sea, at the roots of the larger fuci, and under stones, not uncommon.

*DESC.* *Body* from four to twelve inches in length, one-eighth of an inch in breadth, very contractile and polymorphous, soft, glutinous, smooth, of an uniform dark brown colour, a shade lighter on the ventral surface. There is a yellow line above the mouth, which is itself white, vesicular, and terminal. *Anus* terminal. When at rest it coils itself up into a round ball, and easily separates into several portions, each of which will continue to live and move for at least some days. A white thread-like intestine runs from one extremity to the other, not visible when the animal is entire, but which can be easily drawn out after it has separated

itself. When young, there are two small eyes visible at the side of the head, and the yellow line does not exist, but there is no other material difference.

3. PL. LACTIFLOREA.

3. *Pl. linearis, mutabilis, lactiflorea, antice maculis binis rubris; oculis pluribus.*

*Hab.* The sea shore, under stones and amongst fuci, common.

*DESC.* *Body* linear, about three inches long when extended, but very contractile and polymorphous. It is of an uniform cream colour, sometimes faintly tinged with red, marked with two red spots near the head, and there are two others behind these but less distinct. Anterior to the spots are the minute black points or eyes arranged on the sides.

---

Class. ARACHNIDÆ. Lamarck.

Fam. PYCNOGONIDÆ. Id.

Gen. NYMPHUM. Fab.

1. N. COCCINEUM.

1. *N. corpore glabro, coccineo; geniculis tarsisque flavis.*

*Hab.* The sea, near Berwick.

*DESC.* *Body* and *legs* slender, of nearly equal thickness, of an uniform fine transparent red colour, with the joints and tarsi yellowish. *Rostrum* yellowish: *mandibles* like the body. When magnified, a central vessel, distinguished by its deeper tints, is seen running uninterruptedly through the body and legs; and the latter are somewhat clothed with very soft white delicate hairs. *Rostrum* cylindrical, subclavate, not jointed, divided beneath by a longitudinal line, terminal. *Mandibles* two, originating from the first segment of the body, biarticulate: basal joint long, second short and ovate, armed with two small equal claws. *Body* quadriarticulate: *tubercle* oculiferous; *eyes* two.? *Legs* eight, five times the length of the body, equal. *Coxæ* four-articulate; the

two basal joints short and equal, the two following a little longer. *Thighs* as long as the *coxæ*, very slightly dilated. *Tibiæ* of two equal joints, each nearly as long as the thigh. *Tarsi* three-articulate, first minute, second rather long, falciform, with a few teeth on their internal edge, and terminated by a single rather long claw. *Tail* without any appendage.

I have entered into this particular description, since there may be some doubt of the correctness of referring the animal before us to the genus *Nymphum*. I had it alive several days, during which it was repeatedly examined, but could discover no trace, either from its motions, or from careful inspection, of its having lost any organ; yet there are no *palpi*, nor egg-bearing organs. The number of joints in the legs, and their proportional lengths do not agree with those assigned to the genus by Dr. Leach; from which circumstance I may infer with some confidence that it is synonymous with neither of his species. When at rest with its legs drawn up, it so closely resembles some of the fine coloured *Confervæ* but more especially a detached portion of the *Chondria articulata*, as to be easily overlooked. It appears to me interesting in so far as its transparency allows us to examine its circulating system with an accuracy which perhaps no dissection could enable us to amend. Close to the tubercle we see the vessel (for there is no heart) divide into two equal branches, one to each mandible; and the flux and reflux of a fluid is easily observable in them, more particularly in one, as in it there was a black particle which moved alternately backwards and forwards with the motion of the fluid. From the tubercle the vessel runs down the body, giving off a single branch, equal in size to the trunk, to each leg; and this branch continues uninterrupted to the *tarsus*. Neither in the trunk nor branches could we perceive any movement of the fluid.

---

GAMMARUS PUNCTATUS.

To my description of this species I wish to add that it dwells in a furrow from one to two inches long, composed of pieces of seaweed, and lined internally with a thin, smooth and glutinous

membrane. The furrow is attached to the under side of stones, or is imbedded in some entangled *fucus* or *conferva*. A male and female reside in each, and I have seen them, when expelled from it, repeatedly return, and re-enter it.

Berwick upon Tweed,

August 22d, 1827.

[To be continued.]

ART. LI. *Notice on the appearance of some rare Birds in England.* By GEORGE TOWNSHEND FOX, Esq., F.L.S., Mem. Zool. Soc., &c.

[To the Editor of the Zoological Journal.]

My dear Sir,

If a notice of the acquisition of subjects of Natural History of rare occurrence in this country be not thought unworthy of insertion in your Journal, I beg leave to submit the following instances of captures of Birds in England to the attention of your readers.

I am, my dear Sir,

Yours most faithfully,

Durham, Jan. 19, 1828.

GEO. T. FOX.

ROUGH-LEGGED BUZZARD. (*Selby*.)

*Falco lagopus.* Linn.

This species of *Falco*, though of rather rare occurrence, is occasionally found in different parts of England. Besides the young bird which was shot near Westoe in the county of Durham in 1825,\* I last year saw at Matlock Bath, in Derbyshire, a live

\* See "Synopsis of Newcastle Museum," pp. 49; 252.

specimen of this kind, which was shot and captured about two years before in that neighbourhood by one of Mr. Mawe's workmen. Its wing only being injured, it was brought home alive, (though not without a severe injury to its victor in having his hand tranfix'd by its claws, whilst endeavouring to secure it,) and it was presented by him to Mr. Vallance, the intelligent keeper of Mr. Mawe's Museum. This gentleman placed it for the moment in his garden in the front of his house, and on its being fed, after two days fasting, it became tame and established itself on a piece of artificial rock work, which it had scarcely quitted for an instant from the period of its capture to the time I saw it. On this appropriate and elegant pedestal I doubt not it has been often seen by many who have been visitors or passengers in Matlock, though its species seems not to have been distinguished. As its age is now well known, its plumage is worthy of being noticed as descriptive of the adult bird. Its head is very hoary, and somewhat resembling the colour of the Honey Buzzard's, and the bases of its tail-feathers are deeply white for above half their length. These two marks seem most distinctive of the full grown Bird, in which respect it exactly resembles the specimen at present preserved in the Ashmolean Museum at Oxford. When I saw it, it was fed on a rat a day; to procure a constant supply of which, the exertions of most of the stable-keepers in Matlock were put in requisition.

CREAM-COLOURED SWIFFOOT. (*Selby.*)

*Cursorius isabellinus.* Temm.

*Cream-coloured Plover.* Lath. Syn. V. p. 217. Supp. p. 25. t. 116.

*Le Courvite.* Buff. VIII. p. 128. Pl. Enl. 795.

The capture of this Bird may be considered as one of the rarest which has occurred in England of late years. It was shot October 15, 1827, under Timberwood Hill, in Charnwood Forest, Leicestershire, by a tenant of Mr. T. Gisborne's, who resides at Charley Mill, near that place. He described it as coming flying over his

head, uttering a cry with which he was unacquainted, and it settled near him.

Its colour is nearly all light buff or nankin, except the primaries, which are dark brown. There are a few dark spots on the lateral feathers of the tail near the end, but not black with the white spot as described by Temminck. The back and tail coverts have also zigzag darker lines. A white stripe, enclosed in a black span, extends on each side from above the eyes to the nape. Its length is ten inches, and its bill which is dark coloured is a good deal curved in both mandibles, the lower of which is about half an inch shorter than the upper. The thighs are fleshy but rather bare of feathers, and its legs are long and scaly. Its toes, which are only three, a circumstance that occasioned Latham to arrange it with the Plovers, are slightly edged inwardly with a membrane which connects the outer to the middle, and forms the rudiment of a web. The middle toe is nearly twice the length of the others.

This rare subject is at present the property of Mr. Gisborne's father, the Rev. T. Gisborne, F.L.S., of Yoxall Lodge, Staffordshire, to whose ornithological taste his son knew the possession of it would be a subject of congratulation. He has liberally furnished the use of it to Mr. Selby and Mr. Bewick, for the purpose of engraving figures of it for their works on British Ornithology.

I scarcely need to remind your readers that only three specimens of this Abyssinian Bird are on record as having been taken in Europe, viz. one in France, which furnished Buffon's description and the figure in the "Planches Enluminées;" one in Austria (see Stephens's Gen. Zoology); and a third in England, which belonged to Dr. Latham, and which was afterwards purchased for eighty-three guineas. M. Temminck however hints at a fourth, a young bird, in the Darmstadt Museum.

#### THE OLIVACEOUS GALLINULE. (Mont.)

*Gallinula Baillonii.* (Vieill.) Temm.

The Rev. Mr. Gisborne has also in his possession a Bird which answers more nearly than any other the descriptions of the above

two kinds, which I have for some time suspected to be the same, and am now, from a view of this specimen, tempted to bring together. It was shot in the meadows near Spondon, a village about three miles south-east of Derby, November 8, 1821. Its length is  $7\frac{1}{2}$  inches; its make slender. Its colour from below the chin to the thighs is uniformly dark slate without spot, like the Water Rail, and this colour rises over the eyes by a well defined line. Above, the prevailing colour is russet or olivaceous brown, which on the crown is varied by small black stripes; and on the back and coverts of the wings are numerous white spots, rather large, of a mottled form, edged and intermixed with black. The thighs, abdomen, and under tail coverts are transversely barred with black and white; the bill is dark green, and the legs apparently the same. The wings reach to only half the length of the tail, and the tertial feathers are as long as the primaries.

I first suspected this to be the little Gallinule of Montagu, or *Gall. pusilla* of Temminck, but in that species the wings are stated by both authors to reach to the end of the tail, and the tertials, by Montagu, to be very short. In the former circumstance it corresponds with Montagu's figure of the Olivaceous Gallinule, and Temminck's essential character of the Poule d'eau Baillon. It differs in some respects from Mr. Selby's figure of Dr. Thackeray's *Gall. Baillonii*, but principally in the darker colour of its breast and belly, which may be owing to difference of sex. In other marks it agrees closely with the figure.

If I should be right in this appropriation, it will serve to bring together two uncertain synonyms, and confine our number of British Gallinules to those described by M. Temminck; in which case however Col. Montagu's name of Olivaceous Gallinule (*Gall. Foljambii*,) would be entitled, in point of priority, to a preference to that of the continental authors.\*

\* The bird described above is, I believe, an adult specimen of the *Gall. Baillonii* of Temminck. I cannot however acquiesce in Mr. Fox's opinion respecting the identity of the two species quoted in the text. The Olivaceous Gallinule of Montagu is the *Gall. pusilla* of Bechstein and Temminck, and does not at any age exhibit the white spots on the wing coverts which are conspicuous in *Gall. Baillonii*. The extent of the wings compared with the tail,



## LEACH'S OR THE FORK-TAILED PETREL.

*Procellaria Leachii*. Temm. Man. p. 812.

This species was first noticed by Mr. Bullock, in the Island of St. Kilda, and described by M. Temminck. Its occasional visits to more Southern latitudes are, I suspect, not so rare as has been imagined, and its residence by no means confined to its native Island, as has been asserted by its first describer. Its wanderings to inland places, though so contrary to its apparent habits, are perhaps no less frequent than those of its lesser congener, the *P. pelagica*, or Stormy Petrel. Two specimens have been in my hands taken in England, viz. that belonging to Mr. Yarrell, recorded in Zool. Journ. vol. ii. p. 25, which was caught on the Essex coast, in Nov. 1823, and another in the possession of the Rev. T. Gisborne, killed at Chapel le Frith in Derbyshire, much about the same time. I have also within the last year recognized a bird of this species in each of the museums of Liverpool, Manchester, and Oxford, though it is only at the latter that it was known as such. I could not however learn where those specimens were taken, yet when joined to the Picardy bird mentioned by Temminck, and the two others taken in Devonshire and Hertfordshire, as noticed by Mr. Yarrell, the conjecture is that they were visitors in this country.

## THE SPUR-WINGED GOOSE.

*Anas Gambensis*. Linn. *L'Oie armée*. Buff.

The compleat evidence of the capture of this species in England, where it has been hitherto unnoticed, justifies us in recording it among the rest of our rare visitants. The bird was shot on 20th June, 1821, near St. Germain's in Cornwall, and sent from thence by Mr. H. Newburn, of that place, to Mr. Bewick, by whom it was placed, after figuring it, in the Newcastle museum, and the curious particulars of its capture as furnished by Mr. Newburn, I have described in the account of that museum.

in mounted specimens, as referred to in this instance, must be taken with some limitation; the natural articulation being once divided, the position of the wing depends entirely on the observance and care of the artist who preserves the bird.

## THE RUDDY GOOSE (Lath.), or Kasarka Duck.

*Anas rutila.* (Pallas) Temm.*Greyheaded Duck.* Brown Ill. of Zool. pl. 41. and 42.

A specimen of this bird was found in the Allan museum, when it came to Newcastle. After much conjecture respecting its history and synonymy, the evidence of its capture in England was satisfactorily established by the discovery of Mr. Allan's MS. catalogue, where it is recorded as having been shot at Mr. Portman's seat at Bryanston in Dorsetshire, in the severe frost of 1776. Two birds of this species had evidently been once in the possession of Mr. Pennant, as Brown's figures were made from them. I may however venture to say, that the specimen belonging to the Newcastle Museum, and which has lately been exhibited to the Linnean Society, is unique as a British killed one. Mr. Bewick has engraved a figure of it in his new edition, under the name of Ferruginous Duck, conceiving from its colour, that it might be the bird described by Pennant under that name, but which is now generally admitted to have been the *Anas Nyroca* or Castaneous Duck of Montagu.

## VULTURE.

I have only seen the wood-cut made by Mr. Bewick, from a drawing by Miss Trevelyan, of the bird which was killed at Bridgewater, in 1826, out of two which were seen there. The preserved bird is stated to be in the possession of the Rev. J. Matthew, jun. of Kelve. I take the present opportunity of mentioning this uncommon occurrence of a Vulture being seen in this country,\* to excite the attention of some member of our Society to its inspection and description. It is probably the *Vultur fulvus* of Temminck.

\* In a letter received from Mr. Selby I find that the *Neophron percnopterus* has been shot in Somersetshire, and has been figured in a forthcoming number of the "Illustrations of British Ornithology." I can not say whether this is the bird alluded to in the text by Mr. Fox, or whether both species have been found in England.

## THE BLUE-BREASTED WARBLER.

*Sylvia Suecica*, Lath.

The account of the capture of this species being already noticed in the late annual address to the Zoological Club, I have only further to mention that the specimen (which was taken on Newcastle Town Moor, in May, 1826), though decidedly of the species here mentioned, yet differs from the description of authors in some respects. The whole of the breast from the chin is bright azure, except a triangular russet-coloured spot in the middle of the blue, which spot is usually found white. This has not, that I am aware of, been noticed in any description. The colour of the whole of the upper parts is darker than in the specimens and descriptions with which I have been able to compare it; though the well-defined russet of the upper half of the tail agrees. The zones of black and white over the blue on the breast are only incipient. Young birds being mostly subject to migration, I am induced to consider this as an additional proof of this bird being only in its early stage.

---

ART. LII. *On the occurrence of some rare British Birds.*  
By WILLIAM YARRELL, Esq., F.L.S.

BELIEVING that an occasional record of the appearance of some of our scarce British Birds is not entirely without its use, I again venture to transmit to the Zoological Journal a brief notice of such as have occurred to my own knowledge within the last six months.

*Lestris Pomarinus*. Early in the month of September, 1827, a young specimen of this gull was shot on the Norfolk Coast and brought to London for preservation. Of this rare bird, but few British examples have occurred. The late collection of Mr. Bullock at the Egyptian Hall contained but two, one killed at Dover, the second at Brighton. Only three others have come to my knowledge since, one killed in Hackney Marsh, and now in the collection of a gentleman at Wanstead; one killed during last

year in Cambridgeshire, and in the collection of the Rev. Dr. Thackeray, the Provost of King's College; and the specimen now first mentioned.

*Upupa Epops.* A young bird of the year was shot by my friend William Thompson in his garden at Hamworthy near Poole in the latter part of September. The injury this bird received from the gun was slight, and on being approached it drew back the head, erected its crest, and lowered the wings, making a show of great resistance, but ultimately allowed itself to be taken up without attempting to inflict the slightest wound. This part of our coast appears to be one of the most favorite haunts of the Hoopoe in this country. In the collection of the Rev. Mr. Barclay at Swanage, which I had the pleasure of seeing last autumn, are three Hoopoes, all killed in that vicinity.

*Procellaria Leachii.* A specimen was shot near Chelsea in October last. This bird as well as the *Proc. pelagica* usually occurs during the stormy period of the autumnal equinox, and has lately become a frequent visitor. So numerous were the stormy Petrels on one occasion that more than a hundred were procured within a few miles of Yarmouth during the unusually high windy weather that occurred in the month of October 1824.

*Sylvia Dartfordiensis.* Two specimens of this diminutive warbler came to my knowledge in November last; one killed at Finchley in Middlesex, the other shot on a common near Portsea, Hants.

*Emberiza hortulana.* A beautiful example of this bird was killed near Manchester, also in November last. As this species may be considered an addition to our list of British Birds, and has been confounded with the *Emberiza chlorocephala* of Gmelin and others, I hope to be excused some further detail.

The Green-headed Bunting was first described and figured by Brown in his Illustrations of Zoology from a living specimen then in the possession of Mr. Moon in Hyde Park. Dr. Latham describes a Green-headed Bunting in the collection of M. Tunstal, Esq., in the 3d volume of his Synopsis, p. 211, No. 61. From these sources a description of this bird was copied by Gmelin, Lewin, Montagu, &c. Latham and Montagu both express their doubts of its being a distinct species, no other instances appearing to be

recorded than those before mentioned. Mr. Bewick in the supplement to a late edition of his interesting work on British Birds has given a figure to which he has attached the name of the Green-headed Bunting, *Emberiza chlorocephala* of Gmelin, but with an exact description of the *Emberiza hortulana*. This representation was taken from a bird caught at sea by the Master of a coasting vessel, and would not probably, on that account, be considered as belonging to the British Fauna. To the Synopsis of the Newcastle Museum, by G. T. Fox, Esq., F.L.S., we are indebted for much valuable information on various Zoological subjects, and some particulars of the birds in question. From this author's account we learn, that the specimen of the Green-headed Bunting figured by Brown, while it was alive in the possession of Mr. Moon, passed, when dead, into the collection of Mr. Tunstal. It appears therefore that one and the same bird had furnished the materials for all the various authors before enumerated; and the doubts of Latham and Montagu thus receive additional strength. By a fortunate coincidence, this identical Green-headed Bunting, now belonging to the Newcastle Museum, has at this time been sent to London by Mr. Fox for the inspection of the members of the Linnean Society, and from an examination of it, I am induced to believe, that it is a variety of *E. hortulana*, the plumage having undergone a change produced by artificial food and confinement.

*Podiceps rubricollis*. Three specimens of this rare Grebe have lately been procured, but neither of them had attained the plumage of the adult bird.

*Larus minutus*. A beautiful adult specimen of this extremely rare little Gull was shot on our Eastern coast in January last. The beak was black; the whole of the white plumage of the neck and breast tinted with a delicate rose colour; the tarsi and feet bright vermilion, similar to the colour of the same parts in the Terns, but the interdigital membrane occupied the whole space between the toes.

W. Y.

ART. LIII. *Notices of Insects, taken in the North of Ireland.* By A. H. HALIDAY, Esq.

[To the Editor of the Zoological Journal.]

SIR,

IF the enclosed notices of Insects, taken in the North of Ireland, have sufficient interest, their insertion will oblige

Your obedient Servant, &c.

A. H. HALIDAY.

Clifton, near Belfast, April 13th, 1827.

*Helobia Gyllenhalii*. Gyll., I. S. ii. 40. 3. Near springs, in black peaty soil, at an elevation of 1100—1700 feet; near Belfast, not uncommon.

*Pæcilus cupreus*. var. *rufifemoratus*. Gyll., iii. App. I suspect this to be a permanent variety, as it has occurred for several years confined to one spot.

*Omaseus?* *nigrita*. var. *rufifemoratus*. Tolerably frequent.

*Dyschirius* ———? *Æneus*, antennis et pedibus nigro-piceis.

*Scarites thoracicus*. Illiger, K. P. iii. 3?

*Clivina thoracica*. Gyll., I. S. ii. 170?

DESCR. Length  $\frac{4}{25}$ . *Mandibles* rufopiceous; *front* rugose-impressed; *thorax* lightly channelled, the sides much rounded; *abdomen* oblong ovate; *elytra* punctate-striate, the punctures vanishing before the apex; *body* beneath blackish; *wings* long, whitish hyaline, stigma pale brown.

This does not seem sufficiently distinct from *Scar. thoracicus* of Illiger, which has dusky red feet, and in one variety blackish thighs. It is very active, and runs fast.

Inhabits banks of pools near Holywood, in the county Down, in the cracks left by the drying of the slime, and when the sun shines, running on the surface.

*Hylobius Abietis*. Fab., S. El. ii. 464. 130. June, 1823. Several specimens flying and alighting on *Equisetum*, in a marshy field near Holywood. It has not occurred since.

*Dryinus formicarius*, Latr. On a mossy bank at Holywood, in April, 1826.

*Anopheles maculipennis*. Meig., Eur. Zw. Ins. In profusion, in the neighbourhood of Belfast, throughout the summer and autumn.

2. *A. bifurcatus*. Meig., *ibid.* With the last; taken but once. A female.

3. *A.* ———? A smaller species. *Thorax* lead colour, the sides with a blackish line; *abdomen* dusky, margins of the segments paler; *feet* dusky; *wings* obscure hyaline, nervures and scales blackish.

In shady situations by running waters; a pair taken in July.

As *Dianous cærulescens* is rather a local species, I may mention the following habitat. Banks of the Dee in North Wales, April.

I have not seen it remarked in any work to which I have access, that in one section of the genus *Haltica* the antennæ have the second joint obsolete, so that they appear 10-jointed; to this division (which is also distinguished by the characters of thorax and elytra) belong

*H. Hyoscyami*.

*H. affinis*. *H. atricilla* of Panzer and Donovan.

*H. nigricollis*. E. B.

probably also *H. erythrocephala*, *H. chrysocephala*, *H. Napi*, and *H. Mercurialis*.

It is stated in Kirby and Spence, *Int. to Entomology*, iii. 686, note, that *Dermestes Armadillus*, De Geer, is monomorous. If this be correct, Gyllenhal is mistaken in citing that synonym for his *Scaphidium Armadillo*, which I find to be distinctly pentamerous.

ART. LIV. *Note on the foregoing Paper, with a Description of a new Species of Anopheles.* By J. F. STEPHENS, Esq., F.L.S., &c.

[To the Editor of the Zoological Journal.]

MY DEAR SIR,

THE observations contained in the foregoing letter are highly interesting, inasmuch as they relate to the entomological productions of an hitherto unexplored part of the country; and as they have been submitted to my perusal, with your permission I purpose to add a few remarks. With respect to the insect termed a permanent variety of *Pæcilus cupreus*, I conceive that it ought to be considered as a distinct species, especially as it appears confined to one spot, and has not as yet occurred in England, where *Pæc. cupreus* abounds in every pathway and high road during the spring and summer months. The same observation will apply to the *Omaseus*?, which may probably be synonymous with some of the continental species with rufous femora.

*Dyschirius* is composed of a great number of closely approximating species, which, as I have elsewhere shewn,\* are very difficult to be understood without actual comparison of specimens. I cannot therefore undertake to assert that the above-described insect is novel; but I rather suspect that it is, and have affixed the name *aratus* thereto.

*Hylobius Abietis* does not occur within 80 miles of the metropolis, I therefore cannot from experience say any thing of its habits; but, although it is usually taken in fir plantations, my friend, Dr. Leach, picked up a specimen in a marshy situation in Devonshire, about three years since, at a distance from any fir or pine-trees.

The addition of a third species of *Anopheles*, proves incontestably how limited our knowledge of species remains, arising

\* Illustrations of British Entomology (Mandibulata) vol. i. p. 40.



chiefly from the prevalent disinclination to study minute insects, and from their locality: the above may be called *An. plumbeus*, and as I have already described the British species of the genus in a former volume of the Journal, I shall add the description of a fourth species discovered by myself last July, at Ripley, in Surrey.

Sp. 4. *An. griseus*. *Rufo-grisea*, abdomine concolore, thorace fasciâ dorsali albidâ, lateribus nigricantibus, alis submaculatis. (Long. corp.  $3\frac{1}{2}$  lin.)

Red-griseous; forehead white; thorax with a broad longitudinal whitish band, edged on each side with dusky; pleuræ rufescent; abdomen plain, griseous, not annulated: legs, palpi, and antennæ pale olivaceous; wings nearly immaculate; nervures pale yellowish.

The remarks upon *Haltica* have novelty to recommend them\*: at least I am unacquainted with any work in which they are mentioned, unless they are given in Illiger's Magazine, in the 7th vol. of which work there is a long dissertation on the genus, with descriptions of all the then known species; but, unfortunately, with the exception of the specific characters of the latter, and the characters of the sections, the work is in German. *Halt. Mercurialis* decidedly will not associate with the other species above named, which constitute Illiger's section *Altitarses*, and are elevated to the rank of a genus in Latreille's Familles Naturelles.

I shall conclude by stating that Latreille, in the work last mentioned, places the *Dermestes Armadillus* of De Geer, in his section *Monomera*; but I suspect from its close affinity to *Phalacrus*, *Agathidium*, and *Leiodes*, that it is pentamerous, though I have hitherto been unable to examine the insect with the requisite microscopic accuracy, owing as well to its minuteness as to the fact of possessing a single specimen only; it and two other

\* It may, however, be observed, that the second joint of the antennæ is usually the shortest in Coleopterous insects.

species, which are in my cabinet, belong to the genus *Clambus* of Fischer; they are all very minute.

I am, &c.

J. F. STEPHENS.

10th November, 1827.

3, Leigh-street, Burton Crescent.

---

ART. LV. *Additional Observations to, and Corrections of, a Paper upon the Genus Staphylinus of Linnæus.*  
By J. O. WESTWOOD, F.L.S., &c.

[To the Editor of the Zoological Journal.]

SIR,

ALTHOUGH I cannot but consider myself already much indebted to your liberality, for the insertion in your valuable Journal of my Paper on the genus *Staphylinus* of Linnæus, (in a more especial degree on account of its being the earliest of my entomological labours), I feel happy in again relying upon a recurrence of your kindness, when I forward to you the following additional observations upon the same subject, either for the purpose of correcting errors into which I had inadvertently fallen, or of combining with my former communication several additional facts, trusting that such errors will be overlooked from the endeavours thus made to rectify them.

I am, Sir,

Your very obedient Servant,

J. O. WESTWOOD.

Chelsea, February, 1828.

---

SIAGONIUM QUADRICORNE.

The engraver of the plate accompanying my communication has omitted the natural length of the Larva of this Insect. The specimen from which the figure was drawn, is about half the

length of the Larva of the *Aleochara*, but proportionably narrower, and is nearly equal in size to the smaller female specimens of the perfect insect. I have again met with the Larva in considerable quantity under the bark of decaying felled trees in Kensington Gardens, at the beginning of the present month.

In the 10th volume of the *Annales des Sciences Naturelles*, there is described and figured an Insect of this genus, found near Versailles, (which is said to be extremely rare), under the name of *Prognathus rufipennis*. The specimens described by M. H. Blondel were found by him under the bark of a dead poplar tree, and in consequence of M. Latreille's having communicated to him the description of a specimen of *Siag. 4-corne*,\* transmitted by Dr. Leach from England, M. Blondel has been enabled to compare and determine their apparently specific variations, although he is not enabled to speak with certainty upon the subject, from not having seen the identical British specimen. From the figure indeed we may be led to suppose that he has only described the female of the *Siag. quadricorne*, and should the specimen transmitted by Dr. Leach to M. Latreille have been a male, it will be more than probable that such will prove to be the case.

Nicolai, in his "Dissertatio inauguralis medica sistens Coleopterorum species Agri Halensis," has fallen into an error, both in regard to the generic and specific characters of *Siagonium quadricorne*. He says, "Oxytelorum species aut in littoribus argillaceis et arenosis lacuum, cuniculos talparum instar fodientes, aut locis humidis, in fimo, in truncis vetustis, &c., inveniuntur. Fossorese familiam propriam vel sub-genus peculiare, (*Siagonium*, Kirby,) corpore convexiore, thorace capite manifeste latiore distinctum, constituere videntur."

" A. FOSSORES.†

" Omnes ad littora lacus salsi habitant.

" 1. *O. tricornis*. Gyll.

\* Reference is made to the figure of this Insect, given by Messrs. Kirby and Spence, under the incorrect generic name of *Siagona*. Hence has arisen the idea entertained by the French Entomologists, that Mr. Kirby's generic name should be changed.

† The other section, containing the true *Omalia*, he terms *Coprophagi*.

“ 2. *O. bicornis*. Ahrens, *Fn. Eur. fasc. vii. nondum editus*.  
*Siagonium quadricorne*, Kirby and Spence, *Introd. to*  
*Entom. i. tab. i. fig. 3, vix differt.*

“ 3. *O. fracticornis*, &c.”

His division Fossores, therefore, comprises the sub-genus *Bledius*, and the species congenerous with *O. fracticornis*, from both of which the habits of *Siagonium* are entirely distinct, as I have shewn in my former Paper. And with reference to the note placed after *O. bicornis*, it is evident that if the figure in Ahrens' Fauna referred to be a correct one, and that species really be the same as our *quadricorne*, Nicolai has inadvertently introduced it amongst his *Fossores*, with which group it has not the slightest connexion. Should, however, Ahrens' figure be that of a true *Bledius*, Nicolai cannot have seen the figure of *Siagonium* in the Introduction to Entomology.

With regard to the number of eyes in the Larvæ of the *Brachelytra*, and which I had considered to be four, two being placed on each side of the head, I have to add that it is not easy to ascertain distinctly their number in dark coloured specimens, since they appear as irregularly formed minute tubercles. In one which I possess, having the head lighter coloured than usual, I perceive on each side, (behind the insertion of the antennæ), four of these tubercles placed in an irregular square, and of a black shining colour.

P. 59, line 8. For Labrum, read Labium.

P. 59, line 18. For truncnm, read truncum.

Id. line 29. For enebrosis, read tenebrosis.

At page 60, I have observed that I was not acquainted with any author, who had figured the Larva of any of the *Staphylinidæ*. I was not aware, however, at the time, that, notwithstanding Mr. Marsham and Mr. Walford's opinions upon the subject, subse-

quently noticed, Messrs. Kirby and Spence consider that the Larva, so destructive to young wheat, of which Messrs. M. and W. gave an account, accompanied with an admirable figure by Sowerby, in the 9th volume of the Linnean Transactions, "may perhaps be one of the numerous tribe of *Staphylinidæ*, which are not universally carnivorous."\* Mr. Walford, who discovered the Larva in question, considered it to be the insect generally called the Wire Worm, which is equally destructive; although he could merely conjecture of what it would ultimately prove to be the young. This Larva is not so large as the one which I have figured as that of *Aleochara*, and in its general appearance it is not dissimilar to that of *Philonthus*. It has six strong legs, jointed antennæ, the cylindrical tube at the tail, from each side of the base of which arises a four-jointed bristle, longer than the tube; and Mr. Walford ingeniously suggested, that the two last characters bore considerable affinity to a perfect *Staphylinus*; "but the Larva of that insect," he adds, "is supposed to be carnivorous, and not graminivorous." Mr. Marsham, in his additional observations, clearly shews that this Larva is not the Wire Worm, which he proves to be the young of an *Elater*; adding, that he was unable satisfactorily to suggest even to what group of Insects the Larva was referrible. I think, however, that the characters which I have mentioned, will satisfactorily establish its claim to be considered as the young of one of the *Brachelytra*.

Gædart also, in his usual rude style, has given at No. 120. b. two tolerably accurate figures of the Larva of *Creophilus maxillosus*, one of the largest species of the group, adding also an account of the ferocious habits of the Larva; one of the figures of which represents it in the act of devouring some other Larva. He also gives at No. 120. c. two figures of the perfect Insect, one of which is similarly employed, and which he describes in a very interesting manner, under the appellation of "præcedentis vermis conjugem"!†

In the list of Coleopterous Insects given by Swammerdam, we

\* Introduction to Entomology, vol. i. p. 169.

† Lister's Gædart, 298—9.

find the *Staphylinus* noticed, as having been described, “cum vermiculo suo,” by Mouffet; and of which genus five species were possessed by Swammerdam, “cum vermiculo et nymphâ quæ aliquanto obscuriora ostentat membra.” The Vermiculus of the *Staphylinus*, however, (as Swammerdam calls it,) was described by Mouffet as his 2d species of that genus, but is in fact the Larva of *Stauropus Fagi*, known by the English Collectors under the name of the Lobster Caterpillar!

---

P. 60. In giving the description of a Larva, which I supposed to be that of *Aleochara fuscipes*, I was influenced by a desire to exhibit (by comparison with the Larva of the *Siagonium* and *Philonthus*) the differences existing between the immature states of the insects belonging to the families *Omalidæ*, *Staphylinidæ*, and that which I had previously considered as forming the type of the family *Tachyporidæ*. As, however, it may perhaps be hinted that as a small *Hister* was the solitary companion of the *Aleocharæ*, there is a probability that the Larva in question might be the young of some species of that genus, it will not be thought irrelevant to introduce a short account of the Larva of *Hister cadaverinus*, figured by Paykull in his *Monographia Histeroidum*, which is a long, soft, and whitish Grub, with the head and first segment of the body scaly, and channelled above; the jaws strong and advanced; the antennæ short, and (as in the perfect insect) thickened at their tips; the joints of the body rounded at the sides; and the last joint terminated by a pair of short two-jointed appendages, without any caudal tube.

The characters above noticed, but more especially the jointed anal bristles, will clearly shew that my supposed Larva of *Aleochara*, does not belong either to the *Silphidæ* or *Nitidulidæ*, as suggested by Mr. Kirby; indeed the figure of the Larva of *Nitid. grisea* in the 1st vol. of the Linn. Trans., although exhibiting each segment of the body slightly projecting at the sides, has the abdomen terminated by four small simple inarticulated setæ bent upwards, the two lowermost being considerably the longest. It is also described as having two hind feet, which however are not visible in the figure.

P. 60. The last line but one ought to be inserted between the two preceding; as it stands at present the sense is unintelligible.

---

P. 61. line 3. The insect of which De Geer has figured the Larva and Pupa in loc. cit. is *Phosphuga atrata*, and not *Silpha obscura*, as I had supposed. The thorax of the former insect is large and dilated in front, covering the head like a shield; and we see in De Geer's figure how admirably this formation is typified in its Larva, of which I have given the description at p. 61.

The Larva of *Thanatophilus rugosus*, figured by the same author (v. 7. pl. 44), differs considerably from that of *Phosphuga atrata*, its head being porrected, the segments of the body more serrated, and particularly in the tail being destitute of any kind of appendage. From these and the preceding remarks, it will be seen that there is reason to consider the above mentioned pair of jointed anal processes and the caudal tube, as characters peculiar to the Larva of the *Brachelytra*; which processes, be it remembered, we also find reproduced in, and possessed, (I believe exclusively), by, the perfect Insects of that group in both sexes. (See Latreille, Fam. Nat. p. 244.)

Schaeffer in his valuable *Abhandlungen von Insecten*, v. 3, has given several very excellent figures of the Larvæ of the true *Silphidæ*, amongst which are two of the Larva of *Phosph. atrata*, in which the head is represented protruded in a manner similar to De Geer's figure of the Larva of *Thanatophilus rugosus*, hence I think we may conclude that De Geer's figure of the Larva of *Phosph. atrata* was taken from a dead specimen, in which the head had shrunk under the thorax. The Larva, however, I have little doubt, has the power of protruding or concealing its head as occasion may require. The Larvæ of *Oiceoptoma thoracica*, figured by Schaeffer, do not materially disagree with his figures of the Larva of *Phosph. atrata*.

---

*Bledius Stephensii*, p. 61. On the 28th November, 1826, a short communication was made by me to the Zoological Club of the Linnean Society, containing an account of this insect, of which communication a notice appeared in the 10th Number of

this Journal, in the account of the proceedings of that Club. But during the interval which elapsed between the time when I transmitted the MS. of my former Paper to the Editors of this Journal and the publication of No. 9, in which that paper appeared, Mr. Curtis, (aware of my intentions at the time, and also that the MS. had been forwarded to the Zoological Journal,) obtained a specimen of this insect from Mr. Skrimshire, its captor, of which he gave a beautiful figure in his British Entomology, No. 143, published in December, 1826, under the name of *Bl. Skrimshirii*—my name therefore sinks into a synonym. His figure and description have however enabled me to correct a slight error in the sketches which I have given of the head and thorax, which were made upon a casual examination of the Insect, and are taken in a different point of view to Mr. Curtis's fig. 7. The form and proportion of the horns are sufficiently correct in my figures, but the head in the left hand sketch is represented too globose; in Mr. Curtis's figure it is considerably longer, and apparently flattened behind the base of the erect horns, my sketch of which and of the thorax is correct.

---

P. 62, line 4. For *Leptocheirus*, read *Leptocheirus*.

---

P. 62, Note. Mr. Stephens has informed me that he considers *Oxytelus fracticornis*, as the type of a sub-genus to which he has given the name of *Hesperophilus*, from a circumstance which he has observed connected with their economy, viz. that they are generally on the wing in the evening. This circumstance, however, has been observed by Nicolai in *Bledius tricornis*, which he says, "Vespertino tempore copiosè circumvolat." The *Bledii* and *Hesperophili* also agree in their burrowing habits. Hence I am led to think that the latter ought merely to form a section of the former genus, instead of forming a distinct sub-genus.

---

P. 65, line 22. For *Lebæ*, read *Lebiæ*.

---

P. 57 and 67. In addition to what I have already stated with regard to the slighter developement of the horns in certain indi-



viduals, as indicating an intermediate sex, I have to observe, as corroborative of the idea, that Mr. Haworth, in his remarks upon a Paper on *Bledius tricornis* by Mr. Burrell in the Entomological Transactions, mentions a variety of the male with short horns. Mr. Curtis also mentions a similar variety in *Bl. Stephensii*. Mr. Burrell, indeed, in the paper above alluded to, suggests that the specimens of the short-horned variety discovered by himself may be neuters, and Mr. Haworth also expresses an opinion coinciding with that of Mr. Burrell, and even conceives that such neuters are much more frequent than hitherto imagined. The use of the horns themselves is also noticed by Mr. Haworth in the same paper.

The sense of the first paragraph of p. 67, is confused by the word "perfect" having been inserted in the 3d line, instead of "short horned."

---

ART. LVI. *On Hydraspis, a new Genus of Freshwater Tortoises, of the family Emydidæ.* By THOMAS BELL, Esq., F.R.S., L.S., G.S., &c.

ON the most casual review of the fresh-water Tortoises, constituting the family EMYDIDÆ, it is impossible not to perceive that they consist of several groups of importance, differing in many essential points, both with regard to structure and habits. Their subdivision consequently into the genera *Terrapene* of Merrem, *Kinosternon* of Spix, *Emys* of Brongniart, *Chelonura* of Fleming, *Chelys* of Dumeril, with the addition of *Sternotherus*, defined in a former paper of mine in this Journal, is perfectly consistent with nature, and has been sanctioned by the adoption of Zoologists. A further investigation of the species constituting the genus *Emys* as it now stands, has shewn me another group, which possesses so many important characters, distinguishing it from all others, as in my opinion to require a separate generic name. I had long ago believed that *Testudo*

*longicollis* might prove to be the type of a genus, and subsequent observations upon several other species have convinced me that the conjecture was correct. The characters which appear to me to call for this distinction, are the following. The head and body are much depressed; the nose projecting, narrow, and the nostrils near together; the neck is very long and extensible; the feet flat, and very perfectly palmated. The first vertebral scutum is exceedingly broad anteriorly, constituting a very remarkable peculiarity, and there are invariably thirteen sternal plates, a number which does not exist in any other species of the digitated families, excepting *Sternotherus Leachianus*, and the two species of *Chelys*. It is on the union of all these characters in a greater or less degree in the whole of the group, that I have thought it necessary to found the proposed genus, which I shall designate by the name of HYDRASPIS.

It is evident that in some of the circumstances now enumerated, there is a marked approach to the family *Trionychidæ*, particularly in the great length and extensibility of the neck, the general flatness of the body, the prominence of the nose, and the breadth of the web connecting the toes. In other minor respects, however, as the broad and entire sternum for instance, the two groups are as far removed as possible from each other.

I am not acquainted with any undescribed species, but the following are those of former authors of which this genus is at present constituted: viz. *Testudo longicollis*, which I consider the type; *T. galeata* of Schoepff, (the synonymes of which include *T. scabra* of Retz, *T. subrufa* of authors, *T. olivacea* of Schweiger, and some others); *T. planiceps*, Schoepff, (the same with *Emys canaliculata* of Spix); and probably the whole of the following from the magnificent work of Spix on the *Reptilia* of Brazil; *Emys Amazonica*, *E. viridis*, *E. depressa*, *E. macrocephala*, *E. Tracaxa*, *E. rufipes*. Of these some appear to be more nearly allied to the typical form than others, and it is possible that a better acquaintance with them may lead to a different arrangement from that now suggested; I have at all events thought it necessary to hesitate before I decided on the

admission of all the species quoted from Spix, until I should have an opportunity of examining the animals for myself, especially as his plates are in many cases very doubtful and confused.

Fam. EMYDIDÆ.

Genus. HYDRASPIS.

*Caput* depressum, *rostrum* subacutum; *collum* elongatum, extensile; *sternum* latum immobile; *scutum primum vertebrale* anticè latissimum; *scuta sterni* xiii.

ART. LVII. Characters of the order, families, and genera of the Testudinata. By THOMAS BELL, Esq., F.R.S., L.S., G.S., &c.

Classis. REPTILIA.

Ordo. TESTUDINATA.

*Cor* auriculis binis, *ventriculo* unico biloculari. *Pulmones* separati, *cellulosi*, *abdomini* intrantes. *Os* edentulum, *rostratum*; *maxilla inferior* intra *superiorem* (pyxidi instar) se claudens. *Lingua* lata. *Ventriculus* simplex. *Cæcum* nullum. *Vesica urinaria* maxima. *Membrana tympani* cute communi tecta; *cochlea* nulla. *Penis* simplex *canaliculatus*. *Vagina* simplex. *Ova* plurima *testâ durâ* induta. *Vertebræ colli* 8—9, *mobiles*. *Vertebræ dorsi* 8, quæ cum *costis* atque *sterno* in *testam fornicatam* consolidatæ. *Scapulæ*, *claviculæ*, et *pelvis*, intra *testam osseam* inclusæ. *Pedes* 4. *Cutis* *dorsi sternique* *cornea* vel *coriacea*, *testæ osseæ* agglutinata.

A. Digitata.

Familia 1. TESTUDINIDÆ.

Terrestres. Herbivoræ. *Caput* altum, obtusum; *Maxillæ* *corneæ*, *serratæ*. *Pedes* *squamosi*, *clavati*; *digiti* *indistincti*;

*unguiculi* palmarum 5, plantarum 4, obtusi. *Testa* elevata, gibba, cum sterno maximâ ex parte consolidata, scutis corneis tecta. *Scuta dorsi* 13, *sterni* 12.

Genus 1. TESTUDO. Auct.

*Testa* omnino immobilis. *Pedes* clavati crassi obtusi.

Sp. typ. *T. Græca*. Auct.

Genus 2. PYXIS. Bell.

*Sterni lobus anterior* mobilis. *Pedes* clavati.

Sp. typ. *P. Arachnoides*. Bell, Act. Linn. XV. p. 395.  
t. XVI.

Genus 3. KINIXYS. Bell.

*Dorsi pars posterior* mobilis, parti anteriori ligamento subelastico connexa. *Pedes* subclavati.

Sp. typ. *K. Homeana*. Bell, Act. Linn. XV. p. 400.  
t. XVII.

Familia 2. EMYDIDÆ.

Fluviatiles vel lacustres. Carnivoræ. *Caput* subdepressum. *Pedes* complanati, palmati; *digiti* distincti; *unguiculi* palmarum 5, plantarum (*Hydraspide galeatâ* exceptâ) 4, longi, acuminati. *Testa* depressa, brevi in parte cum sterno connexa, scutis corneis tecta. *Scuta dorsi* 13, *sterni* 12—13.

a. Sterno mobili.

Genus 1. TERRAPENE. Merrem.

*Sternum* bivalve; *valva utraque* eodem axe mobilis; *valva posterior* lobos medium et posteriorem sistens.

Sp. typ. *T. clausa*. Auct.

Genus 2. STERNOTHÆRUS. Bell.

*Sternum* univalve; *lobus anterior* mobilis; *lobi duo posteriores* connexi, immobiles.

Sp. typ. *S. Leachianus*. Zool. Journ. II. p. 206.  
Tab. Supp. XV.

Genus 3. KINOSTERNON. Spix.

*Sternum* bivalve; *lobus medius* fixus, *anterior et posterior* mobiles, ad lobum medium ligamentis articulati. *Scuta marginalia* 23, *sterni* 11.

Sp. typ. *K. longicaudatum*. Spix, Rept. Bras. p. 17.  
t. XII.

b. Sterno immobili.

Genus 4. HYDRASPIS. Bell.

*Caput* depressum; *rostrum* subacutum; *collum* elongatum. *Scutum primum vertebrale* latissimum; *scuta sterni* 13.

Sp. typ. *H. galeata*. (*Testudo galeata*. Auct.)

Genus 5. EMYs. Brongn.

*Sternum* latum; *scuta sterni* 12.

Sp. typ. *E. picta*. Auct.

Genus 6. CHELONURA. Fleming.

*Collum* atque *cauda* longissimæ. *Sternum* angustum. *Membra* nunquam intra testam omninò inclusa.

Sp. typ. *C. serpentina*. (*Testudo serpentina*. Auct.)

Genus. 7. CHELYS. Dumeril.

*Labia* mollia: *nusus* in rostrum productus; *Collum* fimbriatum.

Sp. typ. *C. fimbriata*. (*Testudo fimbriata*. Auct.)

Familia 3. TRIONYCHIDÆ.

Fluviatiles. Carnivoræ. *Caput* cum *testâ* cute coriacea tectum. *Rostrum* productum. *Collum* longissimum, contractile. *Pedes* complanati, digitati, palmati, pentadactyli, triunguiculati. *Sternum* imperfectum. *Cauda* brevis.

Genus unicum. TRIONYX. Geoffr.

Sp. typ. *T. Coromandelicus*. Geoffr.

B. Pinnata.

Familia 4. SPHARGIDÆ.

Marinæ. Herbivoræ. *Caput, membra atque Corpus* cute coriacea tecta. *Scuta cornea* nulla. *Rostrum* corneum; *mandibula superior* emarginata, inferioris apicem recipiens. *Pedes* pinnati.

Genus unicum. SPHARGIS. Merrem.

Sp. un. *S. mercurialis*. Merrem.

Familia 5. CHELONIADÆ.

Marinæ. Herbivoræ. *Caput atque testa* scutis corneis tectæ. *Collum et pedes* squamosi; *rostrum* aquilinum; *mandibula superior* apice uncinato. *Pedes* pinnati.

Genus unicum. CHELONIA. Brongn.

Sp. typ. *Ch. Mydas*. (*Test. Mydas*. Auct.)

ART. LVIII. *Short characters of a few Quadrupeds procured on Capt. Franklin's late Expedition. By JOHN RICHARDSON, M.D., F.R.S., F.L.S., &c.*

1. SOREX FORSTERI, *caudâ (tereti?) longitudine corporis, auriculis brevibus vestitis, dorso xerampelino, ventre murino, dentibus pallidis.*

FORSTER'S SHREW-MOUSE, with a (roundish?) tail as long as the body, short furry ears, back of a clove-brown colour, belly pale yellowish-brown, teeth nearly white.

*Dimens.* Length of head and body  $2\frac{1}{4}$  inches; length of tail  $1\frac{1}{2}$  inch.

*Syn.* Shrew, No. 20. Forster, *Phil. Trans.* 62. p. 381.

*Hab.* Common throughout the Hudson's Bay countries.

2. *SOREX PALUSTRIS*, *caudá corpus longitudine excedente, auriculis subvestitis vellere latentibus, corpore cinerascenti-nigro subter cinereo.*

AMERICAN MARSH-SHREW, with the tail longer than the body, short hairy ears concealed by the fur, back somewhat hoary-black, belly ash-gray.

*Dimens.* Length of head and body  $3\frac{1}{2}$  inches; of tail  $2\frac{1}{2}$ .

*Hab.* Marshy places, from Hudson's Bay to the Rocky Mountains.

3. *ARVICOLA BOREALIS*, *auriculis vellere obvelatis, caudá capite paulo breviori, corpore villosissimo badio nigroque subter cinereo.*

NORTHERN MEADOW MOUSE, with ears concealed by the fur; tail shorter than the head; fur very long and fine; on the back chesnut colour mixed with black, on the belly gray.

*Dimens.* Length of head and body  $4\frac{1}{2}$  inches; length of tail 10 lines.

*Hab.* Great Bear Lake.

4. *ARVICOLA (LEMMUS) HELVOLUS*, *naso pallido obtuso, palmis pentadactylis, capite fulvo nigroque, corpore helvolo subter vix pallidiori.*

TAWNY LEMMING, with a pale blunt nose; a thumb; tawny and black head; reddish-orange coloured body, a little paler beneath.

*Dimens.* Length of head and body  $4\frac{1}{2}$  inches.

Nearly allied to the Norwegian Lemming.

*Hab.* Rocky Mountains.

5. *MYOXUS DRUMMONDII*, *brunnescenti-cervinus subter albus, caudá corpore longiori floccosá.*

ROCKY MOUNTAIN DORMOUSE, yellow brown above, white beneath; tail more bushy towards the extremity, longer than the body.

*Dimens.* Length of head and body 9 inches ; length of tail 7 inches.

There is a specimen in the Museum of the Zoological Society which is defective in the tail.

*Hab.* The Rocky Mountains.

6. *CRICETUS TALPOIDES*, *cinerascenti-niger*, *gulá caudáque albis*, *saccis buccarum triangularibus pendulis*, *auriculis brevissimis*, *pedibus posticis sub-tetradactylis*.

MOLE-SHAPED HAMSTER, of a grayish black colour, with a white chin, throat and tail ; triangular pendulous cheek-pouches ; very short ears ; and only four perfect toes on the hind feet.

*Dimens.* Length of head and body  $7\frac{1}{2}$  inches ; of tail  $1\frac{3}{4}$  inch.

This animal inhabits the banks of the Saskatchewan in lat.  $52^{\circ}$ . and throws up earth like a mole. No specimen was procured by the Expedition, but there is one from Hudson's Bay in the Museum of the Zoological Society from which the above specific character was framed.

The molar teeth have not been examined, but the animal appears to be referrible to Rafinesque's genus *Diplostoma*.

7. *MUS LEUCOPUS*, (Rafinesque,) *caudá longá vestitá*, *corpore griseo-lutescente subtus abrupte albo*, *pedibus albis*, *auriculis magnis*.

*Syn.* *Mus leucopus*, Rafinesque. *Harlan, Faun. Amer.* p. 151.

Less than the *Mus sylvaticus* (Linn.), to which it is very nearly allied.

*Hab.* Northern parts of America. It becomes the domestic Mouse wherever a fur post is established.

8. *ARCTOMYS PRUINOSA*, (Pennant,) *vellere corporis anticè rudiori canescenti* ; *posticè fuscescenti*, *caudá pilosissimá hadiá nigráque*.

HOARY MARMOT, with long coarse fur, particularly on the chest and shoulders where it is hoary ; hind parts dull yellowish-brown ; tail blackish-brown, bushy.



*Dimens.* Length of head and body  $27\frac{1}{2}$  inches; of head  $2\frac{1}{2}$ ; of tail  $8\frac{1}{2}$  inches.

*Syn.* Hoary Marmot. Penn., *Hist. Quad.* 2. p. 398. Whistler. *Harmon's Journey*, p. 427.

*Hab.* The Rocky Mountains.

9. ARCTOMYS (SPERMOPHILUS) LATERALIS, *lineâ in utroque latere luteo-albâ nigro marginatâ.*

SAY'S MARMOT, with a yellowish white stripe bordered with black on each flank.

*Syn.* Sciurus lateralis. Say, *Long's Expedition* 2. p. 46.

This animal has the cheek pouches, claws and habits of the *Spermophili*.

*Hab.* The Rocky Mountains and plains near their bases.

10. SCIURUS (TAMIAS) QUADRIVITTATUS. (Say.)

FOUR BANDED SQUIRREL. Sciurus quadrivittatus. Say, *Long's Exped.* 2. p. 45.

This Squirrel has the cheek pouches and manners of the *Sciurus Lysteri*. (Ray).

*Hab.* Bushy places. Canada to lat.  $56^{\circ}$ .

11. PTEROMYS SABRINUS, *supra ex rubicundo fuscus, caudâ planiusculâ corpus subæquanti, lobo membranæ volitantis rotundato.*

SEVERN RIVER FLYING SQUIRREL, (Pennant;) pale reddish brown above; tail flattish, nearly as long as the body; flying membrane with a rounded lobe behind the wrist.

*Syn.* Sciurus Sabrinus. Shaw, *Zool. ii. part i.* p. 157.

Greater flying Squirrel. Forster, *Phil. Trans.* 62.

Severn River flying Squirrel. Penn., *Hist. Quad.* p. 418.

*Dimens.* Size of Siberian flying Squirrel.

*Hab.* Upper Canada and Hudson's Bay.

12. PTEROMYS ALPINUS, *supra luteo-fuscus, caudâ planâ fuliginâ nigrâque corpus longitudine excedente, margine membranæ volitantis recto.*

ROCKY MOUNTAIN FLYING SQUIRREL, yellowish-brown above; tail flat, longer than the body, blackish-gray; flying membrane with a straight border.

*Size* greater than that of the Siberian flying Squirrel.

*Hab.* The vallies in the Rocky Mountains.

13. LEPUS (LAGOMYS) PRINCEPS, *ecaudatus fuscus* : *latere pallidior* : *subtus griseus, capite brevi, auriculis rotundatis*.

THE LITTLE-CHIEF HARE, tail-less, blackish-brown on the back, yellowish brown on the sides, gray beneath; head short and thick, ears rounded.

*Dimens.* Length  $6\frac{3}{4}$  inches.

*Hab.* Rocky mountains. Stony places.

The specific name is a translation of its Indian appellation.

ART. LIX. *A Description of some Coleopterous Insects in the Collection of the Rev. F. W. Hope, F.L.S. By the Rev. WILLIAM KIRBY, F.R. & L.S., &c.*

Fam. SCARABÆIDÆ. MacLeay.

Genus. SCARABÆUS. MacLeay.

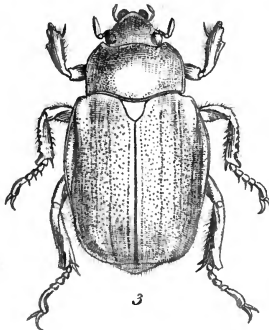
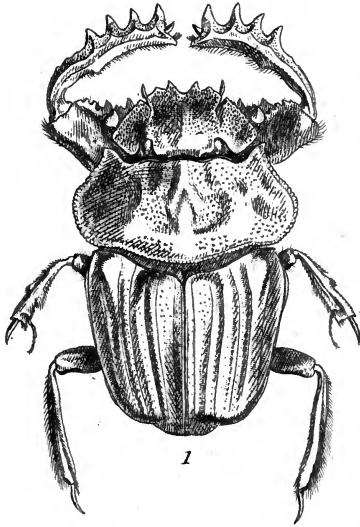
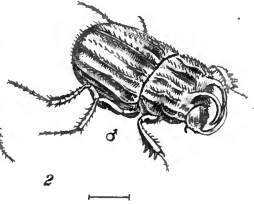
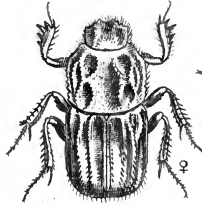
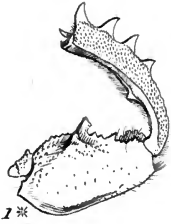
*femoralis.* S. naso sexdentato, prothorace dilatato cætrato, femoribus anticis maximis dentatis.

Plate xiv. Fig. 1.

Long. Corp. Unc.  $1\frac{3}{4}$ .

*Hab.* in Nigritiâ.

*Descr.* Corpus latum, depressum, nigrum. Caput dilatatum naso sexdentato, vertice subprominulo. Prothorax dilatatus, sparsè granulatus: spatiis quibusdam elevatis lævibus, anticè repandus. Elytra depressa minutissimè et vix conspicuè granulata, substriata: striarum interstitiis serie unâ alterâve punctorum obsoletius excavatorum. Brachia humeris (*femora antica*,) maximis basi denticulatis; apice gonythecâ dentatâ, dente item discoidali subtus





armatis: cubitis quadridentatis, intus ciliatis, basin versus dente valido instructis. *Pedes* intermedi, tenues satis: tibiis brevibus; postici tibiis longis admodum subarcuatis, extus barbatis. Inter antepectus et postpectus vallis satis profunda interponitur.

This curious species, which is a native of the Soudan, forms a distinct and new type in the genus *Scarabæus*, distinguished from those already known, not only by its immense shoulders, or anterior pair of thighs, but also by the vast chasm interposed in their underside, between the manitrunk and the alitrunk, and by the want of the anterior sinus of the prothorax, which in them receives the head, and which in the insect above described, is replaced by an undulating line.

Genus. DREPANOCERUS.

*Maxillæ* lobo superiori magno concavo.

*Palpi maxillares* articulo extimo reliquis longiori elliptico.

—— *labiales* cylindrici, articulo extimo brevissimo et ferè obsoleto.

*Caput* masculum cornutum.

*Prothorax* masculus bicornis.

*Scutellum* tectum.

*Elytra* porcata.

This insect is *primâ facie* so different from *Oniticellus*, to which it is most nearly related, and between which and *Onitis* it ought to be placed, that it might rather be mistaken for a *Trox*. Its most striking differences from *Oniticellus* are the long horns that arm the head and prothorax of the male; the peculiar sculpture of the prothorax and elytra of both sexes; and the absence of a scutellum. Not having an opportunity of dissection I cannot say whether it ought to be recorded as more than a subgenus.

*Kirbii*. D. (Hope, MSS.)

Plate xiv. Fig. 2. ♂. ♀.

Long. Corp. Lin.  $1\frac{3}{4}$ .

*Hab.* apud Promontorium Bonæ Spei. D. Bowie.

*Descr.* *Maris corpus* subdepressum, griseum, obscurum. *Caput* cornu longo admodum, filiformi, arcuato, recurvo, castaneo arma-

tum. *Nasus* acutè bidentatus. *Prothorax* porcatus : porcis sex repandis, anticè cornutus : cornubus duobus longis, incurvis castaneis falcis messorii fere formâ, sed magis teretibus armatus, posticè obtusangulus. *Scutellum* omnino tectum. *Elytra* planiuscula tricarinata, carinis rectis, pallido obscurè maculata. *Medipectus* latum tricarinatum. *Brachia* humeris incrassatis, extus obtusangulis ; cubitis rectis tridentatis.

Alt. sex. Capite thoraceque inermibus.

#### GENUS ONITIS.

*ambigua*. O. grisea obscura, prothorace reticulatim elevato-lineato, elytris bicarinatis, tibiis anticis arcuatis.

Long. Corp. Lin.  $4\frac{1}{2}$ .

*Hab.* apud Promontorium Bonæ Spei.

*Descr.* *Feminae corpus* oblongum, depressum, griseum, lutosum. *Caput* naso rotundato, lineâ elevatâ fronte separato : duæ aliæ lineæ ab occipite ad nasum ducuntur et spatium quadratum includunt. *Prothorax* longus admodum : lateribus prominentibus, disco lineis elevatis areas plures includentibus reticulatus. *Elytra* juxta marginem externam longitudinaliter bicarinata, apice setosa. *Brachia* humeris triangularibus magnis ; cubitis longis admodum, apice incurvis acutis, extus quadridentatis. *Medipectus* latissimum planum.

This insect appears to bear the same relation to *Onitis* that the preceding does to *Oniticellus*, but whether the other sex is distinguished by similar horns on the head and prothorax I cannot tell. It may therefore at present stand under that genus. The body of the specimen from which this description was taken, appears as if covered with mud : part of which arises from minute scales, but besides these, minute fragments of straw or wood adhere to it both above and below.

Fam. RUTELIDÆ. MacLeay.

Genus. CHRYSINA.

*Nasus* subelongatus, rotundatus, margine recurvo.

*Labrum* obtusangulum.

*Mandibulæ* magnæ, supra concavæ, subtus convexæ, crassæ, extus rotundatæ.

*Labium* subtrapezoideum, apice subemarginatum.

*Maxillæ*.

*Palpi maxillares* quadriarticulati: articulis primo et tertio brevibus; secundo sensim crassiori, extimo incrassato.

*Palpi labiales* triarticulati: articulo secundo primo, et tertio secundo longioribus et crassioribus.

*Antennæ* decemarticulatæ & ferè ut in *Areodá* & *Pelidnotá*.

*Cubitus* tridentatus.

*Unguiculi* simplices.

*Prosternum* pone pedes anticos rectum, vertice planatum.

*Mesosternum* conicum.

This genus is nearly related to *Pelidnota*, MacLeay, but the mandibles are differently shaped and much thicker and stronger, indicating a more substantial kind of food. The sternal processes, which afford constant characters in the present and some other families of Fabricius' great genus *Melolontha*, are also different. Mr. Hope having only a single specimen I could not examine the internal edge of the mandibles and maxillæ.

*Peruviana*. C.

Plate xiv. Fig. 3.

Long. Corp. Unc.  $1\frac{4}{5}$ .

*Hab.* in Peru.

*Descr.* *Corpus* supra glauco-viride, obscuriusculum, confluentè punctatum. *Antennæ* ferruginæ: scapo aurato. *Palpi* ferruginei. *Elytra* humeris & gibbositate anali colorè viridí denu-  
datis, punctata: punctulis minutissimis interspersis. *Podex* apertus, punctatus. *Tarsi* cærulescentes. *Abdomen* aureo vel cupreo-aureo splendore micans. *Alitruncus* subtus villosus.

This beautiful species has one peculiarity which seems to distinguish it from all its cognate tribes—its green colour, at least on its upper surface, is merely superficial, and may be removed by friction, when only black appears.

Sectio. HETEROMERA. Geoffr.  
 Tribus. TAXICORNES. Lat.  
 Familia. COSSYPHIDÆ. Kirby.

Genus. EMCEPHALUS.

*Oculi* cingentes, vel supra et infra contigui.

*Nasus* rotundatus, subemarginatus.

*Labrum* transversum.

*Palpi maxillares* quadriarticulati: articulo primo brevissimo; secundo elongato, arcuato, clavato; tertio brevi, apice incrassato; extimo magno, compresso, securiformi.

— *labiales* breves, triarticulati: articulis duobus primis brevissimis, subtriangularibus, extimo securiformi.

*Antennæ* filiformes: articulo tertio reliquis longiori; articulis 7—10 turbinatis majoribus, cum ultimo subovali clavam formantibus.

*Corpus* ferè ut in *Helæo* disco longitudinaliter elevatum lateribus explanatis reflexis.

*Prothorax* anticé sinu magno ad recipiendum caput.

*Prosternum* carinatum.

*Mesosternum* anticé excavatum.

*Metosternum* apice rotundatum.

*Tarsi* pulvinati.

This genus is nearly related to *Helæus*, Latr., but the thoracic lobes do not go before the head, as in the true *Helæi*, and the antennæ are clavated and not filiform. *H. piceus* (Linn. Trans. xii. 468, n. 19.) appears to belong to it.

*Gibbosus*. *E. piceus*, elytris basi gibbosis, punctato-striatis, bicarinatis, margine explanato lævissimo.

Plate xiv. Fig. 4.

Long. corp. Lin. 9.

*Hab.* in Australasiâ.

*Descr.* *Corpus* piceum. *Caput* lineis duabus elevatis inter oculos convergentibus, et spatium elevatiusculum includentes.



*Prothorax* lævissimus niger. *Elytra* disco longitudinaliter elevato, subseriatim confertim punctato, bicarinato, margine explanato lævissimo.

Tribe. Uncertain.\*

Genus. ADELIIUM. Kirby.

*Hopii*. *A. nigro-æneum*, nitidum, thorace sublacunoso lævissimo : elytris striatis : striis punctatis ; interstitiis alternis subcatenulatis.

Plate. xiv. Fig. 5.

Long. Corp. Lin. 8.

*Descr.* *Corpus* oblongum, supra nigro-æneum, subtus atrum, nitidum. *Caput* punctulis quibusdam sparsis anterieus notatum : nuchâ confertius punctatâ. *Prothorax* haud punctatus, utrinque foveolis 2 vel 3 obsoletis, et unicâ magis distinctâ longitudinali subarcuatâ : lateribus valde rotundatis, margine explanato. *Coleoptera* ovato-oblonga striata : striis punctatis ; interstitiis lævibus alternis obsoletè catenulatis. *Tibiæ* intus apud apicem aureo hirtæ.

In honorem Reverendi FRIDERICI GUL. HOPE, insectorum collectoris et indagatoris indefessi, huic speciei ab ipso communicatæ, nomen merito imposui.

This species much resembles *A. calosomoides* (Linn. Tr. xii. Pl. xxii. fig. 2.) but is as big again. It is distinguished also by having no puncta upon the prothorax, and very few, with the exception of those on the nucha, upon the head. In the elytra also the interstices of the striæ are without puncta, and the alternate ones are obsoletely catenulated.

\* Latreille places this genus in the second Family of his *Helopii* (*Familles Nat.* 378.) but I suspect it rather belongs to the *Blapsides*, (*Ibid.* 375,) and to a distinct family which I would name *Adeliadæ*.

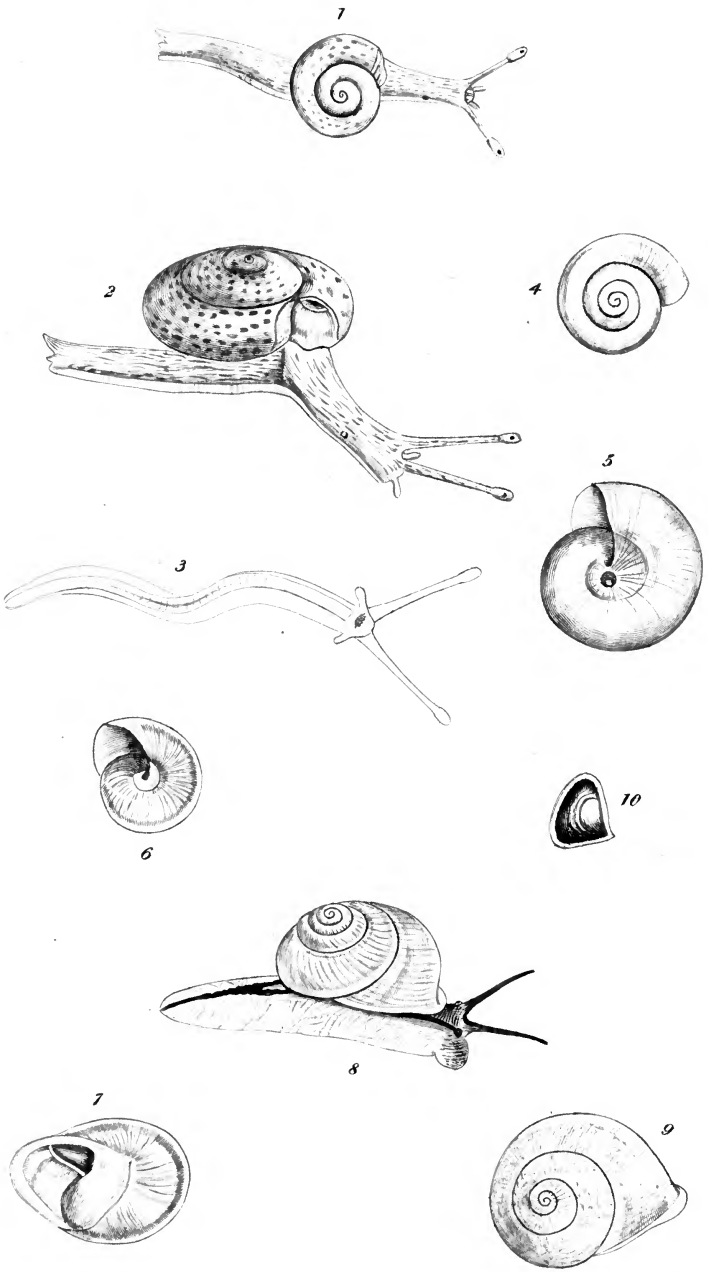
ART. LX. *Note on the Cardita concamerata*. By G. B. SOWERBY, F.L.S., &c.

IT is well known that an anomaly exists in the structure of the *Cardita concamerata* of Lamarck (*Chama concamerata* of Dillwyn). This anomaly consists in the formation of a little cup just within the ventral margin, and it is formed by a fold of the said margin: it is truly anomalous, for though there are several instances among the univalve shells of Molluscous animals of a little cup formed within the principal portion of the valve, I am not aware of any similar formation to the one under consideration; for, in the *Calyptraea*, the little cups are only the more or less completely developed rudiments of columellar and inner lip analogous to those parts in the spiral univalve. In endeavouring to ascertain the use of the above mentioned little cup, we should naturally be led to examine the shells of the same genus and family; this however cannot at present lead to any result, for in no other species does a similar structure exist, and we are not acquainted with any of the animals. The opportunity of examining a single specimen with the dried animal occurred to me some years ago: I then found the two little cups, which are always exactly opposite to each other, filled with very minute globules having the appearance of eggs. I could not, however, form any conclusion from the examination of a single specimen. A late opportunity of examining a number of specimens with the dried animals within them, enables me now to state that these cups are destined to contain the ovaries, and that the eggs appear to remain in them until they are perfectly developed, and ready to disclose the complete animal with its shell. In some specimens of the shell the little cups are only imperfectly formed: upon this circumstance a question arises, as to whether this cup does or does not, begin to be formed until the impregnation of the ovaries has taken place; or whether it be not of so rapid growth as to be contemporaneous with the development of the eggs in the ovaries.

G. B. S.

Jan. 14, 1828.





Rev. L. Guilding on the Zoology of the Caribæan Islands.

NOTE.

Although a Notice on this subject has appeared in another Journal, since the time at which the above Note was handed to the Editor, he publishes it entire, in justice to Mr. Sowerby, by whom the interesting facts contained in it were first publicly mentioned; in justice also to the readers of the Zoological Journal, to whom it will convey fuller information than has yet been given.—ED.

ART. LXI. *Observations on the Zoology of the Caribæan Islands.* By the Rev. LANSDOWN GUILDING, B.A., F.L. & G.S., M.W.S., &c.

[Continued from p. 408.]

MOLLUSCA CARIBÆANA.

Fam. HELICIDÆ. Guild.

Genus. STENOPUS.\* Id.

CHAR. GEN.

ANIMAL. *Corpus* corrugatum, elongatum, raro retractum, motu serpentino difficillimè repens. *Pallium* amplum, foramine communi magno perforatum. *Caput* declive: *os* anticè, inter tentacula inferiora: *labia* plicata: *lingua* emissilis. *Tentacula* duo superiora elongata, capitulo oculigero. *Penis* cervicis elongati latere dextro. *Discus gressorius*† distinctus, linearis, musculis transversis, pedis lateribus multo angustior, veluti in genere Onchidio, (unde nomen). *Cauda* tentaculata, tentaculo sub-retractili, *glandulâ* ad basin positâ.

TESTA heliciformis, umbilicata, diaphana, aperturâ transversâ.

1. *Stenopus cruentatus*.

St. flavo-sanguineus, disco gressorio caudâque flavidis; abdomine sanguineo maculato; pallio rubro, papilloso, albo punctulato

\* Nomen a ΣΤΕΝΟΣ angustus, et πῆς pes.

† The pedal disk is usually flat and simple: in one marine genus it is divided by a medial line, and the muscles of the two sides act with an undulating motion, alternately and independently.

B 21

*Testa* pallidè succinea, depressa, transversè plicatula; anfractibus 5, ultimo multo majori.

Habitat in insulâ Sti. Vincentii satis frequens, frondibus emortuis palmarum repens, in summo vertice montis Sti. Andreae, societate speciei minoris mox describendæ.

Axis testæ 2 lin. Diam. 4 lin.

TAB. XV. Fig. 1. Animal repens auctum.—2. Idem ad latus visum.—3. Discus gressorius.—4. Testa prona.—5. Eadem supina.

2. *Stenopus lividus*.

St. corpore livido, cervice rufescente, pallio nigro maculato.

*Testa* subdiaphana, flavo-fuscenscens; spirâ sub-elevatâ, anfractibus sex; peripheriâ subcarinatâ; umbilico contracto.

Habitat in frondibus emortuis palmarum in vertice summo montis Sti. Andreae, societate *Stenopi cruentati* et *Helicinarum*.

TAB. SUPP. xxvii. Fig. 1. Animal serpens auctum.—2. Long. et Diam. Testæ.—3. Testa aucta.

A very remarkable and distinct genus allied to the Linnean *Helices*, from all of which it differs in the curious contraction of the pedal disk, and the caudal tentaculum furnished with a gland beneath. They creep slowly and awkwardly, not being able to support the shell, on account of the narrowness of the foot, without proceeding in a meandering line: it is confined to the higher and damper parts of the noble mountain on which I have already discovered two species, and soon perishes when brought into a drier atmosphere.

Familia HELICINADÆ. Guild.

Gen. HELICINA. Lam., Gray.

OLYGYRA. Say.

CHAR. GEN.

ANIMAL. *Abdomen* spirale: *corpus* corrugatum: *cervice*, *capite*que distincto, prominente, declivi, transversè rugosis. *Tentacula* duo, elongata, setiformia, subretractilia. *Oculi* radicales,

prominuli. *Os* subtus, longitudinale, *labiis* plicatis. *Pallium* margine toto ad respirationem libero. *Operculum* corneum, subtriangulare, annulare, nucleo subcentrali; in dorso pedis affixum.

*TESTA* spiralis, globoso-depressa, *aperturâ* semirotundatâ; *anfractibus* basilaribus subito majoribus, ultimo nonnunquam subcarinato. *Peristoma* sæpius reflexum. *Columella* basi callosa, umbiliculus senioris claudens.

### 1. *Helicina Occidentalis*.

*Hel.* corpore nunc pallidè livido, nunc fuscescente; dorso pedis, cervicis lateribus, tentaculisque atris; capite cerviceque fuscis; pede subtus flavescente.

*Testa* flavida, supernè rufo nebulosa, subtus unifasciata; *colu-mellâ* lacteâ, labro candido; *anfractibus* sex; operculo brunneo, margine pallido.

Habitat in montibus sylvosis Sti. Vincentii, frondibus repens; gigas in hoc genere.

Var.  $\beta$ . testâ supernè trifasciatâ, fasciâ mediâ majori.

Var.  $\gamma$ . supernè rufo varia, margine immaculato.

The species found in the mountains of St. Vincent scarcely ever descend below 2000 feet above the level of the ocean; while those of Barbadoes are found in any situation however exposed and dry. There are three or four more new species in my cabinet, which shall soon be figured. The shell before us was first described for the 14th vol. of the Linnean Transactions under its present name, which was changed by those who superintended the publication of the volume, under the idea that it was synonymous with *H. fasciata*, from which it differs widely.

TAB. xv. Fig. 6. Pullus, labro tenero, umbiliculo aperto.—7. Animal retractum.—8. Idem repens mag. nat.—9. Testa.—10. Operculum.

### 2. *Helicina variabilis*.

*H.* flavicans; dorso, cervicis lateribus, frontisque fasciâ nigris; oculis atris.

*Testa* solida, pallida, immaculata, globosa; labro marginato crasso; columellâ effusâ.

Habitat gregatim, varietate innumerâ, sub lapidibus Barba-densibus.

Var.  $\beta$ . flavida, immaculata.

Var.  $\gamma$ . rufo supernè undulata.

Var.  $\delta$ . rufo maculata, nebulosa.

Var.  $\epsilon$ . fasciâ maculari.

Var.  $\zeta$ . utrinque castaneo late fasciata.

Var.  $\eta$ . supernè rufescente-flavescens, aperturâ croceâ.

Had I not collected an immense number of the *Helicinæ* alive, I should have been led perhaps to describe the shells as belonging to numerous species. It is almost impossible out of hundreds to find two individuals perfectly alike. The fasciated variety is the rarest and most interesting. The animal is occasionally pale. It creeps fast, bending its tentacula with a quick and constant motion to examine its path; while the *Heliciform* genera carry their superior tentacula generally erect and steady, using the inferior ones and the brachiform expansions of the cheeks principally as their organs of touch.

—◆—

Genus. ACHATINA. Auctorum.

CHAR. GEN.

ANIMAL heliciforme, terrestre, hermaphroditum. *Corpus* valdè corrugatum. *Tentacula* quatuor, duo superiora longiora, capitulis oculigeris. *Os* subtus, *labiis* plicatis: *genis* rotundatis amplis. *Lingua* magna, carnosâ. *Mandibula* cornea, ossiculis dentiformibus. *Penis* ad radices tentaculi dextri. *Pes* maximus, erassus. *Operculum* nullum. *Pallium* amplum, lobus superior supra peritrema vix reflexum, lobus inferior (*Collare*) bipartitus, cervicem tegens, foramine perforatum.



TESTA adiapana, ovato-conica, spirâ elevatâ. *Apertura* sub-ovalis. *Columella* simplex, ad basin truncata.\* *Columellarium* amplum. *Peritrema* sæpissimè simplex, rarissimè submarginatum?† *Umbilicus* evanidus.

*Achatina undulata.*

Ach. flavido-fuscescens; cervice supra pallidiori, basi cœrulescente; tentaculis cœrulescentibus, apice flavescentibus, ad radices verrucosis; soleâ pallidâ, margine fuscescente; pallio margine superno ferrugineo; collari albo obscurè irrorato.

*Testa* ovato-oblonga, cinereo-flavescens, striis undulatis ferrugineo-nigris: spirâ obtusâ, 7-volutâ; columellâ nivea, columellario et peritremate saturaté castaneis.

*Pullus* pallidior. *Testa* flavo-fuscescens, diaphana, infernè trifasciata, fasciis mox (anfractu altero adjuncto) obtectis, evanidis.

Species affinis. *A. melastoma.* Swains.

Long. testæ. 2 unc. 1½ lin.

Habitat in insulâ nostrâ parva cui nomen "Union," arboribus serpens. Species formosa.

\* Mr. Swainson, in his description of *Ach. fasciata*, has made a remark which it is necessary to keep in mind while examining the young of the *Achatina*. In the young shells of *Ach. fasciata*, the base of the columella unites with the termination of the outer lip, making the aperture entire, similar to the lengthened *Helices*, but as the shell advances in growth the base of the Columella becomes thick, and detached as it were from the marginal line, so as to produce an intervening notch, and thus gives the old and the young shell not only an appearance of being distinct species, but of belonging to separate genera. The same law probably takes place through the whole genus. It certainly is observed in the species before us, the young of which might easily be referred to the *Bulimuli*, Leach.

† Mr. Donovan, at plate 149 of his Naturalist's Repository, has figured a species which recedes from the characters usually laid down for this genus, in having the Peritrema incrassate, and somewhat margined. The figure exhibits no sign that the shell has suffered injury, or I should have supposed it to be a *Bulimus*, nearly arrived at maturity; and on further inspection this may prove to be the case, as the larger *Bulimi* are subject to distortions at the base of the columella.

Fam. BULIMIDÆ. Guild.

Gen. SUCCINEA. Auctorum.

*Succinea Barbadosis.*

Suc. flavescens, tentaculis collique lineis nigris; oculis atris; facie rufescente; pallio nigro, marmorato; pede brevi, postice obtuso.

Testa flavescens, sæpe subopaca, longitudinaliter subplicata: spirâ productâ, anfractibus quaternis.

Long. testæ 4—5 lin.

Habitat satis frequens sub lapidibus Barbadosibus; *Succineæ Cuvierii* affinis, at certe distincta species.

Testa sæpe stercorata.

TAB. SUPP. xxvii. Fig. 4. Animal serpens\* auctum.—5, 6. Testa aucta.

Familia. PUPADÆ. Guild.

Genus. PLEKOCHILUS. Guild.

CAPRELLA\*. Linn. Trans. Vol. 14. p. 341.

CARYCHIUM. Muller, Leach.

AURICULA. Lam.

CHAR. GEN.

ANIMAL hermaphroditum. Corpus corrugatum, heliciforme, caput bilobatum. Tentacula quatuor, duobus longioribus capitulis oculigeris. Mandibula valida lunata, ossiculis transversis, appendice triangulari cutaneâ. Penis retractilis, ad radicem tentaculi dextri majoris. Pallium foramine communi perforatum. Ova pauca, magna, crustâ calcareâ.

TESTA vix umbilicata, dextera, ovalis, spiralis, spirâ elevato-obtusâ, anfractibus duobus ultimis maximis, ventricosis. Apertura integra, elongata. Columella uniplicata, plicâ cavernoso-inflexâ. Labrum incrassatum marginatum.

\* Nomen jamdudum Crustaceologis usurpatum.

*Plekocheilus undulatus.*

Pl. corpore olivaceo-nigro, pede subтус pallido; tentaculis apice albescentibus, oculis atris.

*Testa* valida, turgida, longitudinaliter plicata, transversim indistinctè striatula, ferrugineo-castanea, fasciis brunneis obliquis undulatis; anfractibus quinque.

*Carychium undulatum.* Leach, *Zool. Misc.* 1. p. 83. t. 37.  
*Auricula Caprella.* Lam., *Anim. sans vert.* vi. pars 2. p. 140.

Habitat in montibus sylvosis Sti. Vincentii, passim; truncis ramisque obivus.

*Ova* ovali-elliptica, indistinctè corrosa: numerosa, magna, glutine acervatim deposita et filo gelatinoso adjuncta: primum flavescencia, nitida, mox (exsiccata) margaritaceo-calcarea.

*Pulli* pallidi, testâ diaphanâ, pulcherrimè corrosâ, sericeo nitente, striis nullis, labiis simplicibus. *Testa juvenis* subdiaphana, fasciis distinctioribus, *senilis* epidermide crassâ rugosâ fusco-glaucâ, fasciis evanidis, sæpe profundè corrosa.

This noble species occurs in immense numbers in the forests of St. Vincent, generally withdrawn, but sometimes even copulating in the day time. The ova are agglutinated to the vaginating leaves of the *Tillandsiæ*, which, from holding water, secure a damp atmosphere at all times. The lately excluded shell long stood in my cabinet as a nondescript *Succinea*? with a depressed spire. I have at last traced it *ab ovo*, and from the examination of this and the young shell of *Bulimulus undulatus*, a beautiful species which I shall hereafter describe, the learned Zoologist will perceive the necessity of separating with caution such small shells as do not bear on the labrum some positive mark of maturity. In the young of *Plekocheilus* the whole shell is without striæ, and is beautifully corroded on its surface, the plicæ being smooth and distinctly marked as they are added by the first operations of the pallium. In the young of the other snail we observe numerous fine longitudinal and transverse striæ, which it will be in vain to look for in the parts added by the animal as it advances in strength: a circumstance that would have led to the multiplication of species, had not specimens been discovered in various stages.

Fam. LIMNÆADÆ. Guild. Limnacea. De Blainv.  
Genus. PHYSA.\* Auctorum.

CHAR. GEN.

ANIMAL lacustre, pulmoniferum, oviparum. *Caput* lobatum, amplum, lobis sub-tentaculiformibus. *Cervix* longus. *Os* longitudinale, subtus, magnum. *Tentacula* duo, sæpius subulata, ad basin ampliata. *Oculi* sub basin tentaculorum. *Pallium* amplum, posticè sæpe margine crenato-lobatum, externè, dum respirat, antè foramen in tubulum convolutum. *Pes* magnus, complanatus, posticè attenuatus. *Operculum* nullum.

*Ova* rotunda, magna. *Pullus* parvus: multi gregatim pulpâ gelatinosâ obvoluti. *Testa* nondum declarata pallida, spirâ obsoletâ.

Cito serpit, et sæpe superficiem aquæ petit ludens; pede reverso resupinata natat.

TESTA sinistrorsa, convoluta, sæpe subventricosa, ovalis vel oblonga, spirâ prominente. *Apertura* longitudinalis, ovato-lanceolata, supernè acuta. *Columella* tortuosa. *Peritrema* tenue.

*Physa marmorata.*

Ph. viridis, atro irrorata: pallio nigro marmorato, posticè lobato-venoso: capite maximè lobato: soleâ lividâ.

*Testa* tenuis, ovato-oblonga, flavescenti-fuscescens, diaphana, nitida, longitudinaliter obscure plicata; columellario lato, pallido; peritremate sæpe purpurascens; spirâ exsertâ, acutâ; anfractibus sex.

Var.  $\alpha$ . maculis subtus opacis.

Habitat in fossis Sti. Vincentii copiosissimè.

*P. rivalis*, Sow., Gen., species Guadaloupensis affinis est, at incolâ invisâ res incerta manet.

Hostes decipiens testam vesturâ viridi tegit, et sic in fundo tuta serpit. Species duæ Barbadeses, et fortè subgenus distinctum, cum *Planorbi parvulo* mox describendæ.

\* Genus bene separatum. Genera *Aplexa*, Flem., et *Myxas*, Leach, mihi ignota.

Fam. PATELLADÆ?\*

Gen. ANCYLUS. Auctorum

## CHAR. GEN.

ANIMAL unisexuale? testâ penitus tectum. *Corpus* molle, subdiaphanum. *Caput* distinctum: *genæ* rotundatæ. *Os* inferum, magnum. *Cervix* elongatus, liberus. *Tentacula* duo subulata, retractilia. *Pes* brevis. *Abdomen* affixum. *Oculi* sub basin tentaculorum diaphanorum. *Penis*? exsertus (f. 2.) ad radices tentaculi sinistri. *Anus* ad sinistrum latus. *Branchiarum* ramus parvulus prope anum et foramen lateris. *Pallium* amplissimum, liberum, tenuissimum, cavitatem totam lambens; margine continuo, simplici.

*Motus* segnis.

*Pulli* ovati, sub cute gelatinosâ communi rotundatâ per paria tria foliis affixi.

TESTA patelliformis, tenuis, obliquè conica; apice subacuto, posticè ad dextrum inflexo; *apertura* ovalis, margine simplici expanso.

1. *Ancylus irroratus*.

A. pallidé flavescens, nigro obscurè irroratus: fronte abdomineque rufescentibus: oculis atris: soleâ immaculatâ pallidâ.

*Testa* concentricè plicata, subdiaphana; epidermide nigro-viridi, atro irroratâ: apice subobtusos, postico: *aperturâ* subrotundo-ellipticâ.

Habitat frequentissimè in foliis emortuis fossarum Sti. Vincentii, aere excluso arctè adhærens.

Long. Testæ 3 lin.

TAB. SUPP. XXVI. Fig. 1. Animal serpens auctum.—2. Animal reversum.—3, 4. Testæ.—5. Figura pedis, *a*, branchiæ in situ. *b*, branchiæ ad latus visæ.—6. Animal testâ avulsâ.

\* Genus Patelladis *analogum*, at fortè Lymnæadis *affine*. Structura corporis nondum satis patet. Parvitas scalpellum recusat.

2. *Ancylus radiatus*.

*A. flavescens*, nigro irroratus, dorso maculis tribus vel quatuor pallidis magnis: facie rufescente: abdomine obscuro.

*Testa* ovali-elliptica, vitrea, diaphana, concentricè plicatula, radiatim striata, epidermide evanescente.

Habitat cum præcedente; pulchra species.

TAB. SUPP. XXVI. Fig. 7. Animal serpens auctum.—8. Long. nat. testæ.—9. Testa aucta.

## Familia. AMPULLARIADÆ. Guild.

## SYNOPSIS GENERUM.

Genus 1. PALUDINA. Auctorum.

Genus 2. PACHYSTOMA.\* Guild. Labro crasso, marginato, sæpiùs canaliculato; operculo testaceo.

\* Umbilico parvo; testa globosa.  $\left. \begin{array}{l} A. globosa. \\ A. corrugata. \\ A. puncticulata. \end{array} \right\}$  Swains.

\*\* Umbilico evanescente..... *A. crassa*. . . . . Swains.

Genus 3. AMPULLARIA. Sw. Labro simplici, tenui; operculo corneo.

\* Testâ globosâ; umbilico majori  $\left\{ \begin{array}{l} A. fasciata. \\ A. sordida. \\ A. luteostoma. \\ A. reflexa. \\ A. leucostoma. \end{array} \right\}$  Swains.

\*\* Testâ oblongâ; umbilico minori. *A. oblonga*. . . . Swains.

\*\*\* Testâ globosâ; aperturâ angustâ; umbilico maximo, profundo; columellâ obsoletâ... *A. effusa*. . . . . Swains.†

\* Nomen a *παχὺς* crassus, et *στόμα*, os.

† This species forms the transition through *Ceratodes* to the *Planorbidae*, and is probably more allied to that genus than to *Ampullaria*.

Genus 4. CERATODES. \* Labro simplici; operculo corneo; testâ discoideâ; umbilico maximo profundo; columellâ evanidâ. . . . . *A. cornu arietis*. Sow.

Genus. PALUDINA. Auctorum.

CHAR. GEN.

ANIMAL spirale, monogenum, fluviatile, amphibium, &c. † *Caput* probosciforme, liberum. *Os* subtus, genis tumidis. *Oculi* prominuli, ad basin externam tentaculorum. *Tentacula* duo subfiliformia, subcontractilia, sinistrum in altero sexu elongatum. *Pes* tenuis, margine antico ampliato-lobato. *Solea* ‡ lata, margine (serpentis) sæpe reflexo. *Operculum* corneum, in dorso pedis.

TESTA vestita, elongato-ovata, spiralis, tenuis, subumbilicata, *anfractibus* convexis; *aperturâ* subsemiorbiculari, oblongiusculâ, superne angulatâ. *Peritrema* || tenue, simplex, connexum.

*Paludina parvula*.

Pal. flavescens, nigro irrorata; capite crasso, nigro, oculis atris; tentaculo elongato rubescente.

\* A *κερατώδης*, cornu imitatus.

† This genus has been thoroughly investigated by the illustrious Cuvier, and I have therefore less reason to regret that the minuteness of the only species I have seen here prevents me from drawing up more extended characters.

‡ This term may be very properly applied to the flattened disk of adhesion and motion, which is formed by the under side of the true foot (*pes*), and which in *Stenopus*, Guild., is so curiously distinguished from it.

|| It would perhaps be better to confine the term *Labrum* or *labium* to the animal, using *Peritrema* for the outer lip of the shell, and *columella* for the inner. The space connected with the pillar, and marked by its distinct and polished outline, owing to the constant protection of the pallium, it may sometimes be convenient to term *Columellarium*. In *Achatina undulata* it is of a different colour from the pillar. In some species of *Cassis*, by the constant deposition of shelly matter, it is raised above the body of the shell. In some genera it is contracted in its limits, and does not occupy, as usual, the whole extent of the aperture.

*Testa* elongata, fusciscente, longitudinaliter plicatula: anfractibus sex: operculo fusciscente: umbiliculo minori: spirâ acutâ.

Habitat semel obvia in fossis Sti. Vincentii, cito serpens societate *Physarum*.

Long. testæ 2 lin.

TAB. SUPP. xxviii. Fig. 1. Animal ad latus visum.—2. Idem pronum.—3. Testa. Figuræ omnes auctæ.

Genus. AMPULLARIA.\* Auctorum.

CHAR. GEN.

ANIMAL monogenum, fluviatile, spirale, pulmono-branchiatum. *Caput* proboscidiforme, liberum, magnum, transverse rugosum; *genæ* in lobos duos tentaculiformes expansæ. *Os* anticum, labiis plicatis. *Mandibulæ* cartilagineæ, musculis validis tumidis. *Lingua* cute elongatâ tecta, medio ossiculis transversis crebris, lateribus antice alatis. *Oculi* pedunculati, ad basin externam tentaculorum. *Tentacula* vera duo, longissima, setacea, subcontractilia. *Pes* complanatus, latus: *soleâ* subtriangulari, anticè marginatâ, truncatâ. *Operculum* corneum, in dorso pedis; plicis subconcentricis, nucleo laterali-medio. *Pallium* magnum, liberum; sub cervice in musculum album elongatum, complanatum, retractorium, conversum: *Foramen* respirationis magnum, sub pallio supra siphonem sinistrum positum. *Branchiæ* pectini-formes, dextrales, sub pallio: fimbria elongata cum recto et oviductu parallela. *Respiratorium* (vel antrum respirationis) maximum, dorsale, bursiforme, supra siphonem longissimum perforatum. *Cervix* utrinque alis latis complanatis instructa, quæ in siphones duos fere convolvuntur: *Sipho sinister* ante foramen respirationis situs aerem inspirat, dexter sub ano positus respirat, et stercus expellit. *Anus* contractilis, rectum elongatum. *Penis* exsertus, maximus, carnosus, sub margine pallii ad dex-

\* I have never seen the sinistral species, of which the genus *Laniste*, De Montf., is composed.



trum latus prope anum (maris) positus; apice attenuato, basi appendiculato, glandulifero; appendice perforato.

TESTA dextera, vestita, tenera, longitudinaliter plicata, globosa, valdè ventricosa. *Spira* depressa, vel brevis: anfractu ultimo prægrandi: basi latè umbilicato. *Peritrema* simplex,\* semper tenue, raro subreflexum. *Apertura* integra, oblonga, maxima, expansa.

*Motus* segnis: respiranda superficiem petit et alam sinistram cervicis in tubum rigidum convolvit. Dum inspirat tentacula flectit caputque motu lento retrahit, aerem apice siphonis accipiens. Vitæ tenax.

\* Testa valdè globosa; umbilico majori.

*Ampullaria dubia.*

Amp. flavescens, fuliginoso marmorata; siphone respiratorio flavo, atro irregulariter fasciato: soleâ lividâ.

*Testa* olivaceo-viridis, fasciata, fasciis obscuro-purpureis, latis: spirâ rufescente, brevi: aperturâ pallidè croceâ, nebulâ livido-purpureâ suffusâ: operculo superne fusco, inferne castaneo-nitente.

Habitat in fluviis Americæ æquinotialis valdè frequens, spirâ sæpè corrosâ.

Species affines *Amp. luteostoma*, et *Amp. fasciata*. Swains.

Var.  $\alpha$ . fasciis obliteratis. †

Var.  $\beta$ . testâ castaneo-viridi.

TAB. SUPP. xxvii. Fig. 7. *Amp. dubia*, (var.) serpens.

*a*, Operculum, *b*, Siphon dexter, *c* Sinister.—8. Eadem respiranda ad superficiem aquæ adscendens, siphone respiratorio exserto.

\* The species with substestaceous opercula and a margined Peristome, form my genus *Pachystoma*, the type of which is *Ampullaria globosa* of Swainson. Zool. Illus.

† This variety I received alive with the *Ceratodes* from a small river in the Gulph of Paria, and its inhabitant is here figured: it is a coarser shell than one which my brother sent me from the canals of Demerara: in these quiet waters the bands are distinctly painted. I have no doubt, from the examination of many specimens, that they are mere varieties.

Genus. CERATODES. Guild.

AMPULLARIA. Sow.

PLANORBIS. Lam.

CHAR. GEN.

ANIMAL *Ampullariæ* simile, at siphones cervicis minores et breviores. *Penis* apice supra verrucam deflexo, &c.

TESTA dextera,\* discoidea, tenera, *epidermide* tenuissimâ vestita, facie Planorbis, longitudinaliter plicatula; *umbilicus* maximus profundus, (incolâ serpente) sinister, centralis. *Spira* valde depressa, vix prominula; anfractibus omnibus dextrorsum conspicuis. *Operculum Ampullariæ*, at reniforme. *Peritrema* simplex, *Columella* evanida. *Columellarium* parvulum. *Apertura* semirobundato-lunata, ab axe remotissima.

Typus genericus, *Planorbis cornu arietis* †. Lam.

*Ceratodes fasciatus*. Guild.

Cer. flavescens, nigro marmoratus: soleâ pallidâ, nigrescente maculatâ: operculo fusco, subtus castaneo.

*Testa* flavescente pallida, atro-castaneo fasciata: spirâ apice rufescente, sæpe corrosâ: aperturâ croceâ.

*Ampullaria cornu arietis*. Sow., *Gen. of Shells*.

*Planorbis cornu arietis*. Lam., vi. pars 2. p. 152.

*Lister. Conch.* tab. 136. f. 40. malè.

Var.  $\alpha$ . pulchrior, fasciis crebris, aperturæ nebulâ purpureâ. Animal pallidius, rufescente flavidum, nigro pictum, soleâ pallidiori immaculatâ.

Var.  $\beta$ . fasciis paucis latioribus.

Habitat varietate multiplici in fluviis Americæ æquinoctialis, satis frequens.

DESC. Respiratorium diaphanum, amplum, fuliginosum. Abdomen spirale. Cauda cinereo-livida, pallido reticulata. Pallium pallidum, flavido reticulatum, marginis superioris glandibus fasciæformibus. *Penis* flavidus.

\* The shell, when placed with the spire upwards, will not warrant us in calling it, with Lamarck, a sinistral species.

† Nomina composita vituperanda, expellenda.

TAB. SUPP. XXVIII. Fig. 4. Animal supinum, *a* Operculum, *b* Siphon dexter, *c* Siphon respiratorius.—5. Idem serpens.—6. Alæ cervicis.—7. Operculum.

There are probably several species confused under the name of *Planorbis cornu arietis*: according to Gmelin one is an inhabitant of China. My friend Mr. Swainson, in his incomparable Zoological Illustrations, Vol. II. pl. 119, (never having seen the operculum of the *Pl. cornu arietis* of Lamarck,) has objected to Mr. Sowerby's retaining it in the genus *Ampullaria*. This learned zoologist, who, with his masterly pencil, has done so much to illustrate these shells, in a subsequent part of his work, mentions that the operculum had at last been made known to the European naturalist, and very properly advises that it should be retained as the terminal species of the *Ampullariæ*. To *Planorbis* it cannot possibly belong.

Fam. OSTREADÆ. Guild.

Gen. OSTREA. Auctorum.

CHAR. GEN.

ANIMAL. *Corpus* complanatum, pallio obvolutum. *Pallium* contractile, bipaginatam, supernè clausum, margo posticus liber, serie duplici *tentaculorum*. *Branchiæ* ferè longitudine corporis, latæ: fimbriæ quatuor, plicatæ, subcontractiles, duæ in utroque latere. *Appendices* frontales quatuor, compressi, lanceolati, externè venosi, internè branchiis similes. *Musculus clausorius* subcentralis, compositus, divisio inferna sublunata. *Abdomen* arcuatum. *Rectum* longissimum, liberum.

TESTA foliacea, irregularis, inæquivalvis; *umbonibus* (testæ clausæ) disjunctis, ætate inæqualibus. *Valva* inferior major, concava, adhærens; umbone producto, subcanaliculato. Superior minor planiuscula, operculiformis. *Cardo* edentulus. *Ligamentum* medium, subinternum, breve, ad basin umbonum in fossulâ cardinali affixum. *Impressio muscularis* unica. *Basis* tenera foliacea.

*Ostrea Rhizophoræ.*

*O. flavescens*, pallii marginibus tentaculisque brunneis: branchiis inferne lividis: appendiculis labialibus latis, acuminatis.

*Testa* elongata, ovata, apice acutissimo; valvâ inferiori convexâ, solidâ, sæpe arcuatâ; umbonis alis sæpe foliaceo - expansis, plicatis; lamellis irregularibus, imbricatis, raro fornicatis.

DESC. Color pallidus, vel flavescenti-candidus, striis longitudinalibus irregularibus purpureis vel ferrugineo-flavis. Valvæ intus purpureo nebulosæ, submargaritacæ.

It adheres in vast numbers to the roots of the mangrove trees, (*Rhizophora Mangle*,) which grow on the margins of the Lagoons of Carriacou, an island in the neighbouring government of Grenada; from which it is taken up in company with the *Perna Ephippium*, *Mytili*, *Serpulæ*, and *Cirrhipedes*.

It is known by the name of the Mangrove oyster, and is highly esteemed for the table, extending to innumerable varieties, both as to figure and colouring. They adhere in large clusters both to the bark of the Mangrove roots and to neighbouring shells. The cavity is often disfigured with calcareous blackened blisters, which are laid by the pallium over any extraneous bodies which happen to intrude within the shell.

Fam. PERNADÆ. Guild.

Gen. PERNA. Lam., Sow., De Blainv.

OSTREA. Linn.

CHAR. GEN.

ANIMAL. *Corpus* compressum: *vertex* sub-tentaculatus: *abdomen* arcuatum, byssiferum. *Pallium* liberum, retractile; posticè in duas paginas æquales, latissimas, liberas, ad marginem serie duplici tentaculatas divisum: *branchiarum fimbriæ* quatuor, æquales, parallelæ, infernè inter pallii paginas positæ: *brachium* elongatum canaliculatum, ad basin byssi maximi multifiliati. *Musculus adductorius* bilobatus; lobo hoc minori ovato, illo lunato-elongato.

TESTA subæquivalvis, complanata, lamellosa, irregularis, margine ventrali tenuissimo. *Cardo* linearis, verticalis, (quiescentis) hians; sulcis plurimis transversis, parallelis, oppositis, ligamentum multipartitum inter se recipientibus. *Sinus byssi* lateralis, subhians, infra cardinis basin, parietibus incrassatis. *Impressio muscularis* unicus, partitus, subcentralis.

*Perna Ehippium.* Lam.

Per. sordidè flavescens, abdomine ochraceo: pallii tentaculis brunneis, brevibus; capitis tentaculis parvulis: bysso maximo, longissimo, nigro-viridi, filis apice liberis.

*Testa* varia, pallida, purpureo rufo vel ferrugineo picta, intus medio margaritacea: margine inferno acutissimo, tenero: vertice lato, recto, multisulcato, subtus cavernoso.

*Obs.* Listeri figura rudis: fortè species plurimæ sub hoc titulo confusæ latent.

Habitat gregatim frequentissima in lacubus maritimis Indiæ Occidentalis; edulis, pretiosa: radicibus emersis vel testis senescentibus affixa.

This species, so highly esteemed by the West Indian epicure, has been confounded by the vulgar with the true Mangrove oyster, with which it is often found. It swarms in Mustique and others of the Antilles which possess salt water Lagoons, hanging by the byssus in clusters to one another and to the roots of various trees which Providence has with infinite wisdom attached to sand for the protection of lands exposed to the inroads of the sea, where the greater part of the vegetable kingdom would inevitably perish. The Mangrove (*Rhizophora Mangle*) is the principal supporter of the *Pernæ*. The cylindrical clustered roots of this marvellous tree flourish in the surf itself, and the negro has only to take his basket and his hatchet to the Lagoon and by cutting off a few roots to procure an abundant meal.

They are observed to be larger and finer at certain seasons of the year. The shell both in colour and outline is subject to infinite variety. Some specimens are pale and unmarked, while

others are of a dark purple brown, with scarcely a trace of any other colour: the younger specimens are often beautifully radiated.

As in the true oysters the shells are but slightly opened while the animals are feeding on the minute prey brought within them by the action of the tentaculated cloak. They are exceedingly tenacious of life, a property which is of abundant use to them when the retiring of the tides and the dryness of the weather might leave them exposed to the action of the tropical sun. I formerly imagined that a small quantity of water was shut in on the closing of the shells, for the refreshment of the animal; but this is improbable, as the *Pernæ* would infallibly perish if kept for a single day in unchanged sea-water, which, when stagnant and offensive, is fatal to all marine creatures. Packed in damp sand they will live for a month. This discovery will enable me to procure living specimens of many genera peculiar to distant parts of the West Indies, which otherwise I should have been unable to figure without frequent and expensive journies.

Dr. Fleming has published in the Edinburgh Encyclopædia an admirable paper on the various edible *Mollusca* known to Europeans. In my future communications this catalogue will be considerably extended.

[To be continued.]

---

ART. LXII. *On the Osteology of the Chlamyphorus truncatus of Dr. Harlan.* By WILLIAM YARRELL, Esq., F.L.S. In a letter to N. A. VIGORS, Esq., F.R.S., F.L.S., &c., Secretary to the Zoological Society.

MY DEAR SIR,

THE Council of the Zoological Society, influenced by your friendly recommendation, having placed in my hands a specimen in spirit of that very rare animal the *Chlamyphorus truncatus*, described and figured by Dr. Harlan, I have now the pleasure of returning the skeleton to the Museum of the Society,

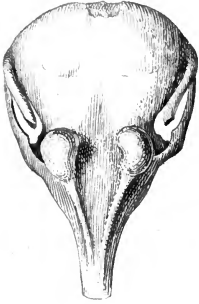
*Fig. 1.*



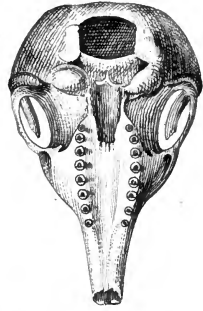




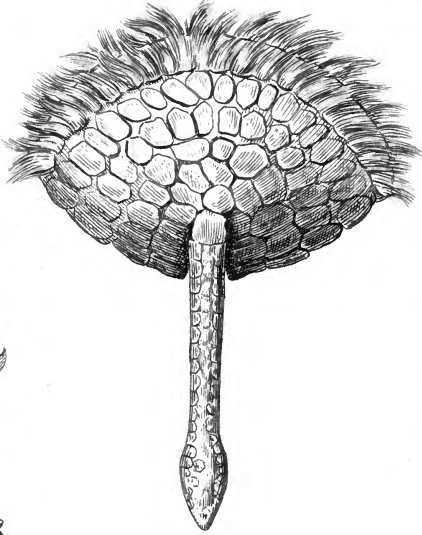
2



3



9



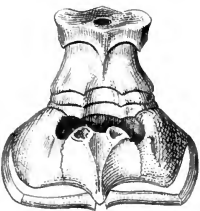
4



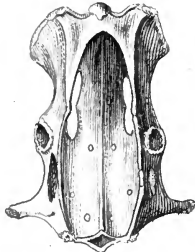
8



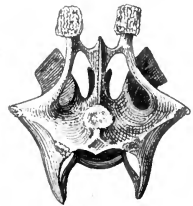
5

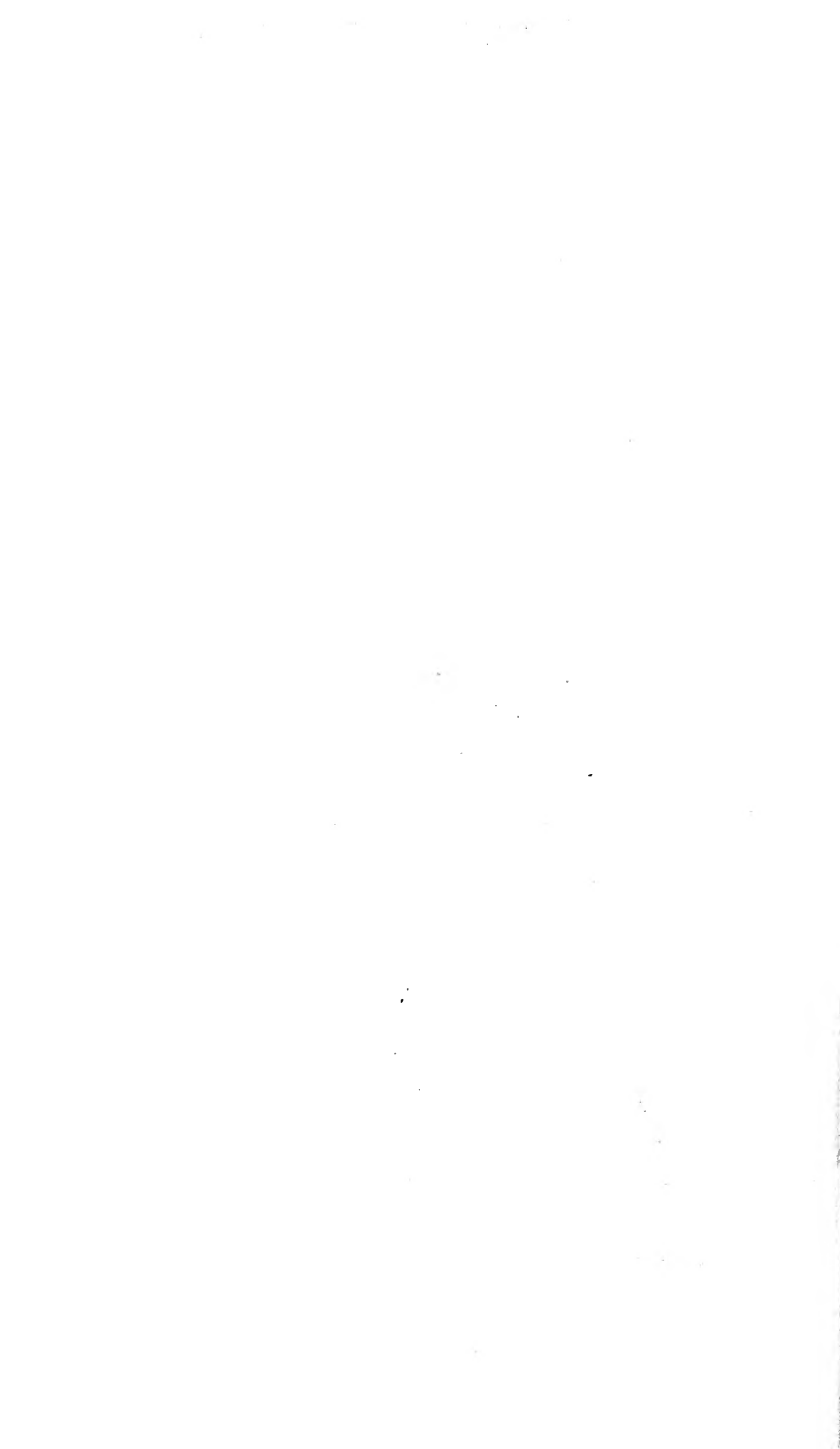


7



6





accompanied with such observations as have occurred to me during the preparation of this small but very interesting quadruped.

The novelty as well as extreme rarity of this animal, probably the only one in Europe, made it a matter of importance that no part of so valuable a specimen should be neglected, and it was therefore determined so to remove the skin and its investing coat of mail, that as perfect a skeleton as circumstances would admit, might be afterwards set up, in addition to the preserved skin. In this part of the undertaking I was essentially assisted by Mr. Leadbeater, to whom the outer covering was afterwards conveyed for mounting, and it is now deposited in the Society's museum.

The excellent and detailed account written by Dr. Harlan,\* leaves me but little to add upon such parts of the *Chlamyphorus* as the specimen examined by that gentleman, though mutilated, enabled him to supply; and I shall therefore endeavour to be the more particular in the account of so much of the structure, as the less mutilated example belonging to the Society affords me an opportunity of describing; premising however, that in the present instance also, the abdomen and thorax had been opened throughout their whole length, and the viscera from both cavities entirely removed.

The external covering was first detached from each of the legs, and the nails as well the phalanges of the toes allowed to remain adhering to the skin; in the figure of the skeleton, therefore, the feet are represented covered by the natural integument. This mode was preferred, rather than assume the delineation of bones, the forms of which could be but imperfectly ascertained.

When separating the skin from the muscles of the back, the fibres (described by Dr. Harlan) by which the outer coat was attached in the line of the vertebræ, were found to be adherent to the muscles immediately investing the spinous processes, and each of them probably affords a nidus for vessels nourishing the external covering; but these attachments did not extend below

\* See Zoological Journal, Vol. II. page 154, and plate VI.

the dorsal vertebræ. Proceeding from thence forwards, the great size of the muscles of the scapulæ and neck was apparent, filling up the whole space, the back and upper portion of the head forming one continued line. The thick plate of scales covering the frontal portion of the head was without difficulty separated from the surfaces of the singular bony processes of the os frontis; the projecting cartilaginous portion of the nose was removed with the skin, and the tendons of several muscles giving motion to the snout were cut through.

The hinder portion of the body still remained to be separated from the skin, and this was found to be a matter of some difficulty. The posterior and inferior portions of the sacrum on each side were firmly united by distinct attachments, differing in form, to certain scales of the truncated extremity of the outer covering.

The necessity of preserving this outer covering entire rendered a division of these portions of bone necessary, and from the particular form of the part, this was attended with some hazard, but was ultimately accomplished without injury, the bones being cut through as near to, and as parallel with, the inner surface of the plates, as their confined situation would admit. The covering of the tail was separated from the vertebræ as far as the flattened extremity, where the greater elongation of the transverse processes of the last four vertebræ, and the tenuity of this flattened portion, made further separation difficult. The tail was then divided between the tenth and eleventh vertebræ, and both parts of the animal entirely separated.

On the inner surface of the removed skin were two long, broad, and thin muscles, extending the whole length of the back; each muscle was divided, as it approached the shoulder, into two portions; the outer one was attached to the superior and greater spine of the scapular bone, the inner and longer slip proceeded forwards, and was inserted into the transverse occipital ridge. The posterior extremity of each muscle was attached to the superior edge of the spine of the ilium.

Adhering to the skin lining the truncated portion, were two sacs, which had been lodged in cavities on each outer side of

the sacrum, immediately under the superior projection, made evident by the corresponding depression in the investing muscle of that part. These globular bags were lined with a secreting surface, but having suffered some mutilation in removal, the mode by which the secretion passed, or its particular use, could not be ascertained; they are probably analogous to the well known anal glands of various other quadrupeds.

The sex was evident from the penis remaining attached to one edge of the divided abdominal muscles; and lying quite loose in the cavity of the abdomen, was found one of the testes, but whether its original situation had been internal or external to the parietes could not be ascertained. The penis itself was large compared to the size of the animal, and one inch and one-eighth in length. The confined situation of the female sexual organ probably renders such a provision necessary, the truncated portion of the coat of mail covering the whole of the posterior extremity.

The coat of mail is covered on the inside by a tough skin, to which it adheres closely throughout its whole surface, with the exception of the truncated extremity of the animal, over which it is more or less free. This lining membrane connects the various rows of parallel plates, but these rows in the specimen belonging to the Zoological Society, are not separated so widely as the representation of the animal described by Dr. Harlan would seem to indicate. In the example before me, the anterior edge of each row of plates extending from side to side over the back, is inserted underneath the posterior edge of each preceding row of plates, and the advantage of such an arrangement to an animal forcing its passage through subterranean apertures, will be sufficiently obvious.

The eye is small; the tongue long, conical, and covered with papillæ; the parotid glands very large. The muscles of the jaw smaller in proportion than those of the other parts of the body.

The form of the head presents the figure of an irregular cone, the base of which is turned toward the spine; the cranium does not exhibit any sutures; the cavity capacious; the frontal bone supporting two rounded processes projecting upwards and some-

what outwards; the space between them occupied by a substance resembling in appearance adipose matter, from which issued a fluid like oil. From the anterior part of the base of these two rounded processes, a narrow ridge of bone extends forwards on each side converging towards the nose. The nasal bones elongated, the orifice opening downwards. No incisor nor canine teeth in either jaw; molars  $\frac{8}{8}$ , cylindrical, separate, encircled with enamel, but none on the crowns; the first tooth on each side in the lower jaw, having no opponent, is the longest, the remaining seven opposed to the first seven of the upper jaw, and taking angular impressions on their surfaces by contact; the direction and depth of the alveolar cavities of the upper jaw distinctly marked on the outside by parallel ridges; in the lower jaw the alveolar cavities are pierced the whole depth. The anterior portion of the lower jaw is elongated; the inferior edge concave the first half of its length, then convex; the plate broad, rising at right angles with the line of the teeth; the condyloid process longer than the coronoid, the condyle itself elongated transversely. The external meatus auditorius is extended in the form of a semicircular cylindrical tube of bone, curving round the base of the zygoma, and passing forwards terminates in an aperture immediately behind the eye. The orbits and temporal fossæ united; the zygomatic arch is slender posteriorly, but becomes much stronger towards the front, expanding downwards, and furnished with an acute descending process. The occipital foramen is of great size.

The cervical vertebræ seven, the first large, the articulating surfaces broad; the 2nd, 3rd, and 4th, very firmly ossified together, pierced with foramina for the passage of the cervical vessels; the 5th united to the 4th on the under surface only; the 6th and 7th slender and separate, allowing the head great freedom of motion upwards: the whole of the last six grooved on the under surface, in the line of the passage of the œsophagus. Dorsal vertebræ eleven, the spinous process of the first slender, three-eighths of an inch long, the others diminish gradually in length, but increase in size; all directed backwards. The first rib is very broad, and from the 2nd to the 8th, the ribs of the *Chlamy-*

*phorus*, like those of birds, are firmly united to the sternum without the intervention of an elongated cartilage; and, again like those of birds, are also supplied with a false joint, at the distance of about two-thirds of their length from the spine to the sternum. The 9th, 10th, and 11th, being false ribs, are united in the usual way to each other, and to the 8th, by elongations of cartilage from their extremities. The portions of ribs intervening between the false joints and the sternum are in the 6th, 7th, and 8th ribs, consolidated, broad, flattened portions of bone, which form the boundary of the anterior and lateral parietes of the thorax. The first bone of the sternum is broad and flat, the superior surface regularly concave, the inferior irregularly convex. Upon the anterior edge of the sternum are two prominences to which are attached the extremities of each clavicle. From each of these articulations a slightly elevated ridge proceeds backwards along the inferior surface of the sternum, converging towards the centre, where they become united and form a prominent crest. The lateral edges of this first bone of the sternum are articulated at its anterior extremity to the first and broadest rib; from this part the bone suddenly becomes narrowed posteriorly, and terminates in a concave articular surface to which the second bone of the sternum is attached. Judging from the imperfect remains of the second bone, of which the upper part only was distinguishable, it would appear that its form was oblong, the superior surface concave. The remaining portion of the sternum was too much mutilated to admit further description.

Lumbar vertebræ three, the spinous processes short and flattened; the two last dorsal vertebræ, as well as the lumbar, furnished with long oblique processes directed forwards, upwards, and outwards; the transverse processes of the first two lumbar vertebræ considerably elongated, the last possessing a rudiment only.

The whole of the sacrum and innominata is so peculiar and unique in character, that I should despair of giving any correct idea of this part, without the assistance of accurate representations. The superior part of the ilium is flattened, the upper

part bent to form an arched plate of bone, the concavity of which faces downwards and outwards; the crista of great length from before backwards. The inferior portion of the ilium is much stronger, inclining outwards, from its junction with the sacrum to the acetabulum.

The transverse and spinous processes of the sacrum are represented by three slender plates of bone, which, approximating as they pass backwards, are united to form a septum, extending down the median line of the sacrum to the tail. A channel is formed on each side of this septum by a thin flat plate of bone, which, arising from the posterior and superior part of the ischium on each side, is bent over the back part of the sacrum, and fixed to an arched and prominent plate of bone, which is extended from this septum outwards, to form a junction with it. The channels thus produced are bounded below by the sacrum, on the inner sides by the septum, on the outer sides by the ascending plates of bone just described, and above by the junction of both. From this union a short osseous stem issues horizontally on each side, and expands into a flattened circular plate of bone, to the rough surface of which, as well as to the tuberosity of the ischium below, portions of the truncated exterior of the animal are firmly attached.

The under surface of the sacrum is broad and flattened, and marked by an indistinct central ridge, as shewn in figure 7. The pelvis is open in front, the ossa pubis on each side do not incline inwards, but descend at right angles from the horizontal surface of the sacrum. In the circumstance of the pelvis being open, there is a second resemblance to the bony structure in birds.

The caudal vertebræ are fourteen in number; the transverse processes of the last four are elongated, to support the thin dilated lateral edges of the paddle or spatular extremity of the tail. Large muscles are imbedded in the two cavities formed on the upper surface of the sacrum by its septum and the two lateral elevated portions of the ischium before described; and there are antagonist muscles of equal size on the under surface. The tendons of these muscles were inserted on the upper and



under parts of the caudal vertebræ, giving great power to the tail, which is probably exercised in removing backwards the loose earth accumulated under the belly of this burrowing animal by the action of the fore legs, and for which purpose the expanded and flattened extremity seems well calculated.

The scapula has its superior margin straight, ending in a notch of great size; the base rounded; the inferior margin concave, and the posterior inferior angle considerably elongated; the coracoid process but little produced, the spine elevated, the acromion very long, passing forwards, downwards, and inwards, over the head of the humerus, to be articulated to a long and slender, but perfect clavicle. There is a second spine of smaller size parallel to, but beneath, the true spine. The humerus is three-fourths of an inch in length, large and broad; the deltoid crest prominent; between which and the external condyle a deep groove is formed for the lodgement of muscles, &c.; both condyles very much elongated transversely; the inner condyle perforated above; the edge rising from the external condyle acute. The radius small, and seven-sixteenths of an inch in length; the ulna flattened, concave upwards, the olecranon nearly as long as the ulna, horizontally flattened also, and presenting a superior concave surface, ending in a curve pointing downwards. The feet furnished with sesamoid bones for the insertion of the tendons of the flexor muscles.

The femur thirteen-sixteenths of an inch long, large and strong; the length of the neck considerable; the great trochanter elongated backwards beyond the line of the articulation of the head of the femur with the acetabulum, and ending in a tuberosity; the lesser trochanter directed downwards; a third trochanter projecting from the outer side of the shaft of the femur somewhat above the middle; the condyles moderately elongated transversely, the outer having a crest directed backwards. The tibia and fibula fifteen-sixteenths of an inch, flattened, concave inwards, firmly ankylosed at each extremity, and arched in opposite directions, giving an appearance of great size and strength to the leg. The os calcis elongated backwards, flat, and ending in a curve slightly inclined upwards. Hind feet

plantigrade. Various admeasurements of these and other parts will be found in Dr. Harlan's account, and need not therefore be repeated.

From these detailed observations, with representations of the whole skeleton, and its different parts, it will be perceived that the *Chlamyphorus truncatus* has points of resemblance to several other quadrupeds, but that it possesses also, upon each comparison, many others in which it is totally different. It resembles the Beaver, (*Castor Fiber*,) in the form and substance of some of the bones of the limbs, in the flattened and dilated extremity of the tail, and the elongation of the transverse processes of the lower caudal vertebræ, but no further.

It has much less real resemblance to the Mole, (*Talpa Europea*,) than its external form and subterranean habits would induce us to expect. In the shortness and great strength of the legs, and in the articulation of the claws to the first phalanges of the toes, it is similar; but in the form of the bones of the anterior extremity, as well as in the compressed claws, it is perfectly different; nor do the articulations of the bones, nor the arrangement of the muscles, allow any of the lateral motion so conspicuous in the Mole. The hinder extremities of the *Chlamyphorus* are also much more powerful.

It resembles the *Bradypus tridactylus* in the form of the teeth, and in the acute descending process of the zygoma, but here all comparison with the Sloth ceases.

The skeleton of the *Chlamyphorus* will be found to resemble that of the Armadillo (*Dasypi species plures*) more than any other known quadruped. In the peculiar ossification of the cervical vertebræ; in possessing the sesamoid bones of the feet; in the general form of all the bones, except those of the pelvis, as well as in the nature of the external covering, they are decidedly similar; they differ however in the form and appendages of the head, in the composition and arrangement of the coat of mail, and particularly in the posterior truncated extremity and tail.

There is a resemblance to be perceived in the form of some of the bones of the *Chlamyphorus* to those of the *Orycteropus Capensis* and *Myrmecophaga jubata*, as might be expected in

animals belonging to the same order. To the *Echidna* and *Ornithorhynchus* it is also similar in the form of the first bone of the sternum; and in the bony articulations as well as the dilated connecting plates of the true and false ribs. It becomes interesting to be able to establish even small points of similarity between the most extraordinary quadrupeds of New Holland and those of South America; that Continent producing in the various species of *Didelphis* other resemblances to the *Marsupiatæ*. In the form of the lower jaw, and in other points equally obvious, the *Chlamyphorus* exhibits characters to be found in some species of *Ruminantia* and *Pachydermata*.

In conclusion I may remark, that in the composition and arrangement of its external covering, and in its very singular truncated extremity, the *Chlamyphorus* is peculiar and unique; and if a conjecture might be hazarded, in the absence of any positive knowledge of the habits of the animal, it is probable, that it occasionally assumes an upright position, for which this flattened posterior seems admirably adapted. It is also unique in the form and various appendages of the head, and most particularly in possessing an open pelvis, no instance of which, as far as I am acquainted, has ever as yet occurred in any species of *Mammalia*.

No further account of the habits of this very singular and interesting quadruped was received by the Zoological Society with the specimen. From Dr. Harlan we learn that the animal is a native of Mendoza, and in the Indian language is called "Pichiciago." Mendoza is situated in the interior of Chili, on the East of the Cordilleras, in the province of Cuyo. Its habits are said to resemble those of the Mole, living for the most part under ground. Many other interesting particulars will be found in Dr. Harlan's account, in the second volume of this Journal, which it would therefore be superfluous to repeat here.

I am, my dear Sir,

Yours very truly,

WILLIAM YARRELL.

Ryder Street, March 1828.

## EXPLANATION OF THE PLATES.

## PLATE XVI.

Figure 1. Skeleton of the *Chlamyphorus truncatus*.

## PLATE XVII.

Figure 2. The head, front view.

3. Upper jaw, and under surface of the head, seen from below.

4. Lower jaw, side view.

5. Cervical vertebræ, first bone of the sternum, with parts of the 1st and 2d ribs, seen from below.

6. The Pelvis, seen from behind.

7. The Pelvis, seen from below.

8. Caudal vertebræ.

9. Truncated extremity and tail.

All the representations are of the natural size.

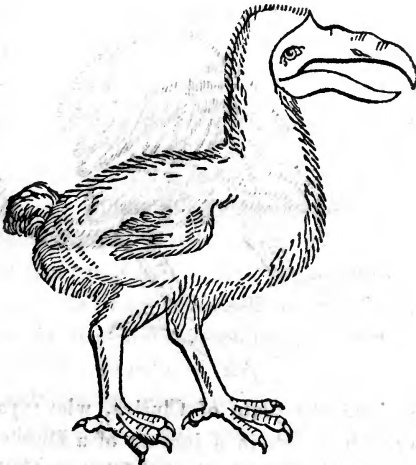
ART. LXIII. *A summary review of the authorities on which naturalists are justified in believing that the Dodo, Didus ineptus, Linn., was a Bird existing in the Isle of France, or the neighbouring islands, until a recent period. By J. S. DUNCAN, Esq., New College, Oxford.*

THE uncertainty and ambiguity attending the descriptions of natural objects by writers who lived before the precise modes now used of identifying and describing them had been devised, apply in a great degree to the accounts which have been transmitted to us, by some of the older naturalists, of the Bird variously named by them *Didus*, *Dodar*, and *Dodo*. And this doubtful character of their relations is increased by the circumstance that no succeeding voyagers have seen this bird, and that throughout the museums of Europe, the only specimens of it stated to be pre-

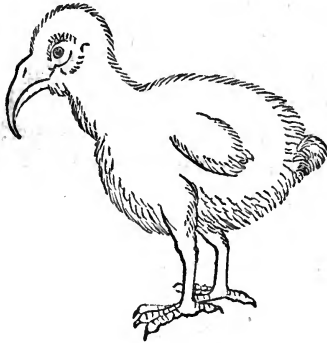
served, are a bill and a foot in the Ashmolean Museum at Oxford, and a foot in the British Museum. Still however the descriptions and representations of it given by the writers alluded to agree in all essential particulars; and it appears that a satisfactory train of evidence may be brought forward in justification of those modern naturalists who have given the Dodo a place in their systems of ornithology, as a genus, which, if really extinct, has only become so within a period of rather more than two centuries since, but much less than three.

There are at least three representations of this Bird which may be called original; because they are manifestly not copied one from the other, and because they are all of very early date, two being in books of the earliest describers, and the third probably copied from a stuffed specimen which appears, by the printed catalogue, and by the incidental mention of several contemporary authors, to have existed in the Museum of the Tradescants at Lambeth, and subsequently at Oxford, when the Museum was placed there by Dr. Elias Ashmole. That they are not imitated one from another will sufficiently appear from the subjoined copies of the three representations.

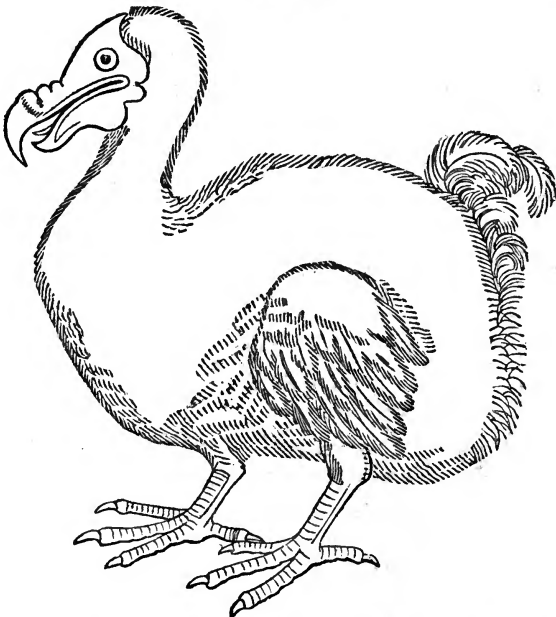
No. 1.



No. 2.



No 3.



The first is from the plate of Clusius, who says he takes his figure from a rough sketch in a journal of a Dutch voyager who had seen the bird in a voyage to the Moluccas in the year 1598.

He mentions farther that he had himself seen only a leg of the *Dodo*, brought from the Isle of Mauritius, in the house of Peter Pauw, a celebrated Medical Professor of Leyden. His *Exotica* is dated 1605.

The second is from Herbert, who published his travels in Africa, Asia, &c. in 1634.

The third is in Willughby's *Ornithology*, and is taken from that given in Jacobi Bontii *Historia Naturalis et Medica Indiæ Orientalis*, 1658. It exactly corresponds with the painting in the British Museum, which was excellently copied, in 1760, by Edwards, who says, "The original picture was drawn in Holland from the living bird brought from St. Maurice's Island in the East Indies in the early times of the discovery of the Indies by the way of the Cape of Good Hope. It was the property of the late Sir Hans Sloane to the time of his death; and afterwards becoming my property I deposited it in the British Museum as a great curiosity. The above history of the picture I had from Sir Hans Sloane and the late Dr. Mortimer, Secretary to the Royal Society."

Clusius calls it *Gallus gallinaceus peregrinus*, and says the Dutch sailors called it *Walgh-Vogel*, "nauseam movens avis." Bontius compares it in some points to an Ostrich, places it in his book next to the Cassowary, and calls it *Dronte*. Others, as Buffon, &c., have called it a Swan, *Cygnus cucullatus*, *Cygne capuchonné*.

Ray published in 1676 and 1688 editions of the *Ornithology* of his friend Willughby; who, after quoting the accounts of Clusius and Bontius, adds "We have seen this bird dried, or its skin stuffed in Tradescant's cabinet." In Ray's *Synopsis Avium*, published in 1713, after Ray's death, the *Dodo* is called *Cygnus cucullatus*, Bontius only being quoted. It is ranged under the head of "Aves rostris rectoribus minusque hamatis."

When it is considered that the first and second figures are mere sketches of travellers who were not artists, the points of general resemblance are perhaps sufficient to warrant our belief that they possibly may refer to an original resembling the third. The hooded appearance of the occiput, the eye placed in a bare callous skin

extending to the beak, the curved and swelling neck, the lumpish body, short wings, short thick legs and divided claws, &c., &c., are common to all, together with the singular tuft of rump feathers. As the two latest are manifestly not copies from the earliest, nor the third from the second, the undesignedness of their agreement (to borrow a phrase from a well known and matchless argument of Paley,) is a strong evidence that they are not forgeries.

The hooded character of the heads corresponds with the head preserved entire in the Ashmolean Museum; and the legs sufficiently resemble that in the British Museum, and that, more decayed, in the Ashmolean.

The bird depicted in these figures appears to differ from any duly classified, from actual knowledge of its characters, by any of our best naturalists, although noticed by all of them. It may be placed however near the Emeu in Cuvier's ranks of *Gallinæ*.\*

\* The following remarks on the station in nature of the Dodo are given in a paper entitled, "Observations on the natural affinities that connect the orders and families of Birds," published in the Transactions of the Linnean Society, vol. xiv. p. 484.

"Considerable doubts have arisen as to the present existence of the Linnean *Didus*; and they have been increased by the consideration of the numberless opportunities that have latterly occurred of ascertaining the existence of these birds in those situations, the Isles of Mauritius and Bourbon, where they were originally alleged to have been found. That they once existed I believe cannot be questioned. Besides the descriptions given by voyagers of undoubted authority, the relics of a specimen preserved in the public repository of this country, bear decisive record of the fact. The most probable supposition that we can form on the subject is, that the race has become extinct in the before-mentioned islands, in consequence of the value of the bird as an article of food to the earlier settlers, and its incapability of escaping from pursuit. This conjecture is strengthened by the consideration of the gradual decrease of a nearly conterminous group, the *Otis tarda* of our British ornithology, which, from similar causes, we have every reason to suspect will shortly be lost to this country. We may, however, still entertain some hopes that the *Didus* may be recovered in the south-eastern part of that vast continent, hitherto so little explored, which adjoins those islands, and whence, indeed, it seems to have been originally imported into them. I dwell upon these circumstances with more particularity, as the disappearance of this group gives us some grounds for asserting, that many chasms which occur in the chain of affinities throughout nature may be accounted for on the supposition of a similar extinction of a



Latham sums up its synonymes as follows: *Didus ineptus*, Linn., 1. 267; *Cygnus cucullatus*, Ray, Willughby, Grew; *Raphus*, Brisson; *Gallus gallinaceus peregrinus*, Clusius; *Le Dronte*, Buffon; *Dod-eersen* or *Walgh-vogel*, Herbert; *Dodo*, Gen. Synop. To these may be added *Dodar*, Museum Tradescant. p. 4.

He observes that it is probable that a specimen of the whole bird was in the Museum of John Tradescant. It is certainly mentioned in his printed catalogue of stuffed skins of birds; "Section 5. *Whole Birds*. *Dodar*, from the Island Mauritius; it is not able to flie being so big." This specimen afterwards passed into the Ashmolean Museum. It is particularly stated by Hyde in his *Religionis Veterum Persarum, &c.*, Historia, 1700, to be then existing in the Museum at Oxford; but was destroyed at a later period, 1755, by order of the Visitors. The evidence of this destruction may be thus given. In the Ashmolean Catalogue, made by Ed. Llhwyd, *Musæi Procustos*, 1684, (Plott being the keeper,) the entry of the bird is No. "29. *Gallus gallinaceus peregrinus Clusii, &c.*" In a Catalogue made subsequently to 1755, it is stated "The numbers from 5 to 46, being decayed, were ordered to be removed at a meeting of the majority of the Visitors, Jan. 8, 1755." Among these of course was included the Dodo, its number being 29. This is further shown by a new Catalogue, completed in 1756, in which the order of the Visitors is recorded

connecting species. Here we have an instance of the former existence of a species that, as far as we can now conclude, is no longer to be found; while the link which it supplied in nature was of considerable importance. The bird in question, from every account which we have of its economy, and from the appearance of its head and foot, is decidedly gallinaceous; and, from the insufficiency of its wings for the purposes of flight, it may with equal certainty be pronounced to be of the *Struthious* structure, and referable to the present family. But the foot has a strong hind toe, and, with the exception of its being more robust,—in which character it still adheres to the *Struthionidæ*,—it corresponds exactly with the foot of the Linnean genus *Craz*, that commences the succeeding family. The bird thus becomes osculant, and forms a strong point of junction between these two conterminous groups; which, though evidently approaching each other in general points of similitude, would not exhibit that intimate bond of connexion which we have seen to prevail almost uniformly throughout the neighbouring subdivisions of nature, were it not for the intervention of this important genus."

as follows: "Illa quibus nullus in margine assignatur numerus a Musæo subducta sunt cimelia, annuentibus Vice-Cancellario aliisque Curatoribus ad ea lustranda convocatis, die Januarii 8vo., A. D. 1755." The Dodo is one of those which are here without the number.

The evidence of Clusius, of Herbert, of Bontius, of Willughby, of Tradescant's Catalogue, of Hyde, of the recorded order of the Ashmolean visitors, and of the Head itself, leave no room for doubt as to the fact that the Dodo once existed. Yet, inasmuch as the volumes which contain them are rare, the publication of some of the early descriptions of this bird, and the statements of some of the writers on each side of the question, may probably be useful to those who are entering on the study of natural history.

Caroli Clusii exoticorum Lib. V. p. 99. *Gallus gallinaceus peregrinus. Cap. IV.*

"Ex octo navibus illis quæ anno nonagesimo octavo supra millesimum & quingentesimum à Christi nativitate, Aprili mense ex Hollandiâ solvebant, ut navigationem in Javam & Moluccas insulas instituerent, & mense Julio insequente magnâ tempestate, superato jam Bonæ spei promontorio, affligebantur, tres a reliquis disjectæ, rectum cursum Javam usque tenere non desierunt, & negotiatione feliciter peractâ, insequente anno Amstelodamum redierunt: quinque autem reliquæ, diuturnâ malaciâ valde afflictæ, tandem, relictâ ad lævam Madagascar insulâ, XVII Septembris montosam quandam insulam in conspectu habuerunt; ad quam lætabundi cursum converterunt, qui recentem aquam in eâ se repturos confidebant: postridie igitur aliquot nautas scaphæ impositos ad eam ablegarunt, qui observarent, an commodus aliquis portus istic reperiretur, in quem naves deducere possent, ut ægros, qui jam frequentes in omnibus navibus stomachace laborabant, in insulâ exponerent, quo faciliùs pristinæ sanitati restituerentur. Qui missi fuerant, sub vesperam redeuntes, non modò portum valdè commodum, & ab omni vento tutum, sed multarum navium capacem, & adèò amplum, ut quinquaginta naves stationem in eo commodè habere possent, se reperisse, præterea limpidæ aquæ vivum e montibus profluentem observasse, retule-

runt. Eam ob causam postridie naves solutis anchoris eò pro-  
fectæ, portum ingressæ sunt, isticque hæserunt usque ad VI  
Nonas Octobris, ægros in terram exponentes, ut curarentur, &  
reliqua ad suam navigationem necessaria peragentes. Interea  
autem, dum in insulâ hærent, varii generis aves observabant;  
atque inter illas valdè peregrinam, cujus iconem rudi arte deli-  
neatam in Diario totam illius navigationis historiam continente,  
quod reduces cudi curabant, conspiciebam, ad cujus normam est  
expressa, quam hoc capite propono. [fig. 1. p. 555.]

Illâ porrò avis peregrina Cygnum quidem magnitudine æquabat  
aut superabat, sed ejus forma longè diversa: ejus etenim caput  
magnum, tectum veluti quâdam membranâ cucullum referente;  
rostrum præterea non planum, sed crassum & oblongum, subflavi  
coloris parte capiti proximâ, cujus extimus mucro niger, supe-  
rior quidem ejus pars sive prona adunca & curva, in inferiore vero  
sive supinâ, subcærulea macula mediam partem inter flavam et  
nigram occupabat. Raris & brevibus pennis tectam esse aie-  
bant, & alis carere, sed earum loco quaternas aut quinas dum-  
taxat longiusculas nigras pennas habere: posteriorem autem cor-  
poris partem præpinguem & valdè crassam, in quâ pro caudâ  
quaternæ aut quinæ crispæ convolutæque pennulæ cineracei colo-  
ris: crura illi potiùs crassa esse quàm longa, quorum superna  
pars genu tenuis nigris pennulis tecta, inferior cum pedibus sub-  
flavi coloris; pedes verò in quatuor digitos fuisse divisos, ternos  
longiores antrorsum spectantes, quartum breviorum retrorsum con-  
versum, omnesque nigris unguibus præditos.

“ Verumenimverò, concinnatâ & descriptâ jam quâ potui fide  
hujus avis historiâ, illius crus genu tenuis rescissum, apud Cl. V.  
Petrum Pauwium, primarium artis Medicæ in Academiâ Lugduno-  
Batavâ Professore, videre contigit recens è Mauritii insulâ rela-  
tum. Erat autem non valdè longum, sed à genu usque ad pedis  
inflexionem paullò plus quàm quatuor uncias dumtaxat superabat;  
ejus verò crassitudo magna, ut cujus ambitus pænè quatuor uncias  
æquabat, crebrisque corticibus ceu squamis tectum erat, pronâ  
quidem parte latioribus & flavescens, supinâ verò minoribus  
& fuscis: pedis etiam digitorum prona pars singularibus usque  
latis squamis prædita, supina autem toto callosa: digiti satis

breves pro tam crasso crure ; nam maximi sive medii ad unguem usque longitudo binas uncias non admodum superabat, aliorum duorum illi proximorum vix binas uncias æquabat, posterioris sesunciam : omnium verò ungues crassi, duri, nigri, minùs unciâ longi, sed posterioris digiti longior reliquis, & unciam superans.

Nautæ huic avi nomen indebant suo idiomate *Walgh-vogel*, hoc est, nauseam movens avis, partim quòd post diuturnam elixationem, ejus caro non fieret tenerior, sed dura permaneret & difficilis concoctionis (excepto ejus pectore & ventriculo, quæ non contemnendi saporis esse comperiebant) partim quòd multos turtures nancisci poterant, quos delicatiores & ori magis gratos reperiebant. Istam autem insulam Batavi appellabant Mauritii insulam à Principe Mauritio, antè à Lusitanis *Ilha do Cerne* vel *Cirne* nuncupatam (ut antè diximus) id est insulam Cygnæum, forsitan ob conspectam in ipsâ jam commemoratam avem, quam cygnum esse existimassent.”

*Some Years Travels into Africa, Asia, &c. by Thomas Herbert, Esq. 1677. Fourth Edition.*

“ The Dodo comes first to our description, here, and in Dygarrois ; (and no where else, that ever I could see or hear of, is generated the Dodo.) (A Portuguese name it is, and has reference to her simplenes,) a bird which for shape and rareness might be called a Phænix (wer't in Arabia ;) her body is round and extreame fat, her slow pace begets that corpulencie ; few of them weigh lesse than fifty pound : better to the eye than the stomach : greasie appetites may perhaps commend them, but to the indifferently curious nourishment, but prove offensive. Let's take her picture : her visage darts forth melancholy, as sensible of nature's injurie in framing so great and massie a body to be directed by such small and complementall wings, as are unable to hoise her from the ground, serving only to prove her a bird ; which otherwise might be doubted of : her head is variously drest, the one halfe hooded with downy blackish feathers ; the other, perfectly naked ; of a whitish hue, as if a transparent lawne had covered it : her bill is very howked and bends downwards, the thrill or breathing place is in the mid'st of it ; from which part to the end, the colour is a light greene mixt with a pale yellow ; her

eyes be round and small, and bright as diamonds; her cloathing is of finest downe, such as you see in goslins: her trayne is (like a China beard) of three or foure short feathers; her legs thick, and blaek, and strong; her tallons or pounces sharp, her stomach fiery hot, so as stoncs and iron are easily digested in it; in that and shape, not a little resembling the Africk Oestriches: but so much, as for their more certain difference I dare to give thee (with two others) her representation." (See p. 236. f. 3).

Jacobi Bontii Hist. Natural. & Medic. Lib. v. p. 70. Comment. a Gul. Pisone. 1658. Caput xvii. *Appendix. De Dronte, aliis Dod-aers.*

“ Inter insulas Indiæ orientalis, censetur illa quæ ab aliis *Cerne* dicitur, à nostratibus Mauritii nomen audit, ob Ebenum nigrum potissimum celebris. In hâc insulâ frequens est miræ conformationis avis *Dronte* dicta. Magnitudinis intra Struthionem & Gallum Indicum, à quibus ex pârte figura discrepat, & ex parte cum iis convenit, imprimis cum Struthionibus Africanis, si uropygium, pennas, & plumas consideres; adeo ut Pygmæus quasi inter eos appareat, si crurum brevitatem respicias. Cæterum capite est magno, deformi, tecto quâdam membranâ, cucullum referente. Oculis magnis, nigris; collo curvo, prominente, pingui; rostro supra modum longo, valido, ex cœruleo albicante, exceptis extremitatibus, quarum inferior nigricat, superior flavescit, utraq; acuminata & adunca: Rictu fædo, admodum patulo, quasi ad ingluviem nato. Corpore obeso, rotundo, quod mollibus plumis, griseis, more Struthionum vestitur: ab utroque latere, loco remigum, exiguis alis plumatis, ex flavo cinereis, & pone uropygium, loco caudæ, quinis pennulis crispis, ejusdem coloris, decoratur. Cruribus est flavescens, crassis, sed admodum curtis, quatuor digitis pedis solidis, longis, quasi squamosis, totidem unguibus validis nigris incedit. Cæterum tardigrada est avis & stupida, quæque facile præda fit venatoribus. Caro earum, imprimis pectoris, est pinguis, vesca, adeoque multa, ut tres quatuorve *Drontes* centenis sociis saturandis aliquando suffecerint. Si non probè elixentur, vel veteres sint, difficilioris sunt concoctionis, & salitæ in peuu reconduntur. Lapilli diversæ formæ & magnitudinis,

cinerei coloris, in ventriculo harum avium reperiuntur; non tamen ibi nati, ut vulgus & pubes nautica arbitratur, sed in littore devorati; quasi & hoc quoque signo cum Struthionis naturâ aves has participare constaret, quod durissima quæque deglutiant, nec tamen digerant.”

Hyde, *Veterum Persarum et Parthorum et Medorum Religionis Historia*. Cap. 24. p. 312.

“ Et ut de Patre conveniunt, sic inter omnes convenit Matris ejus nomen fuisse Dôghdu, quod (liquescente *gh* ut in vocibus Anglicis *high, mighty, &c.*) apud eos plerumque sonat Dôdu; nam sonus *gain* in medio vocum ferè evanescere solet. Hocque nomen innuit quasi fœcunditate ea similis esset ejusdem nominis Gallinæ Indicæ, cujus Icon apud Herbertum in Itinerario extat sub nomine Dodo, cujus etiam exuviæ farctæ in Auditorio Anatomico Oxoniensi servantur. Est autem Dodo magna avis, parvis et exilibus alis, quæ ad currendum juvant, sed ad volatum non serviunt; unde nec Volucris dici queat. Corpus est rotundum et pingue, ponderis L librarum. Cibus pravus, stomacho nauseam movens. Hujus avis vultus præ se fert Melancholiam. Sinciput nudum, occiput lanugine tectum est, ut et totum corpus. Rostrum à naribus ad mucronem leviter virescit, admistâ tincturâ sub-luteâ. Reliqua ex Icone dignoscantur. Plurima parit ova, unde et commodum fœcunditatis emblema. In Insulâ Madagascar et Bygarroys præcipuè nascitur.”

*Observations sur la Physique pour l'an 1778, tom. 12, p. 154.*  
Notes.

“ Sur les Oiseaux monstrueux nommés Dronte, Dodo, Cygne capuchonné, Solitaire & Oiseau de Nazare, & sur la petite Isle de sable, à 50 lieues environ de Madagascar; par M. Morel, Ecrivain Principal des Hôpitaux au Port-Louis de l'Isle de France.

“ Ces Oiseaux, si bien décrits dans le tome 2 de l'Histoire des Oiseaux de M. le Comte de Buffon, & dont M. de Bomare a aussi parlé dans son Dictionnaire d'Histoire Naturelle, sous le noms de Dronte, Dodo, Cygne Capuchonné, Solitaire ou Dinde sauvage de Madagascar, n'ont jamais été vus aux Isles de France, de

Bourbon, Rodrigue, & même Isles Seychelles nouvellement découvertes, depuis plus de 60 ans que ces parages sont habités & visités par des colonies françoises. Les plus anciens habitans assurent tous que ces oiseaux monstrueux leur ont toujours été inconnus. Ainsi il y a apparence que les portugais & hollandais, qui ont decouvert & parcouru ces îles les premiers, y auront trouvé quelques oiseaux très-gros, comme des Emeus ou des Casouars, ou même des Touyous, & les auront décrits chacun selon leur façon de voir, qui est aussi variée que les individus : leurs relations auront été copiées & augmentées par plusieurs voyageurs, & mal traduites en françois, comme fait François Cauche, le Guat & le sieur la Croix qui, dans sa relation des îles d'Afrique en 1688, a copié ces articles. Quoi qu'il en soit, il est certain que depuis près d'un siècle, on n'a point vu ici aucun animal de cette espèce. Mais il est très-vraisemblable qu'avant qu'elles fussent habitées, on y a pu trouver quelques espèces d'oiseaux très-gros, pesans & incapables de voler, & que les premiers marins qui y auront séjourné, les auront eu bientôt détruits par la facilité de les attraper. Ce qui les avoit fait nommer par les matelots hollandois, *oiseau de dégout*, par ce qu'ils étoient rebutés de cette espèce d'oiseaux à force d'en avoir mangé." P. 175.

“ Mais parmi toutes les espèces d'oiseaux qu'on trouve en abondance sur cette île de sable & sur les autres ilots & rochers qui avoisinent l'Isle de France, les navigateurs modernes n'en ont jamais trouvé aucun qui approchât de ceux nommés ci-dessus, & on peut les mettre au nombre des espèces qui ont pu exister, mais qui ont été détruites par la trop grande facilité de les prendre, & ne se trouvent plus que sur des îles ou côtes absolument inhabitées. A Madagascar, où il y a beaucoup d'espèces d'oiseaux inconnues dans ces îles, on n'en rencontre point de semblables à ces descriptions.”

The Dodo is noticed by Shaw, in his *Naturalist's Miscellany*, Plates 123 and 143, and in his *Zoological Lectures*, vol. i. p. 213; it is also particularly mentioned by Cuvier, *Regne Anim.* tom. i. p. 463; but it is unnecessary to cite these authors on the subject, as their works are either in the hands of, or accessible to, every student of natural history.

The continuer of Shaw's *Zoology* thus notices the Dodo, vol. ii. part 2. "The Dodo of Edwards appears to have existed only in the imagination of that artist, or the species has been utterly extirpated since his time, which is scarcely probable. Its beak is said to be deposited in the Ashmolean Museum at Oxford, and a foot in the collection in the British Museum. The former appears rather to belong to some unknown species of Albatros than to a bird of this order, and the latter to another unknown bird; but upon what authority it has been stated to belong to the Dodo, I am at a loss to determine. A painting by Edwards still exists in the British Museum."

This hasty judgment is fully refuted by the above mentioned authorities, especially by the existing head, and the exact resemblance of the leg at Oxford to that in London.

Finally, having applied, through the medium of a friend, to C. Telfair, Esq. of Port Louis, in the Mauritius, a naturalist of great research, for any information he could furnish or procure relating to the former existence of the Dodo in that island, I obtained only the following partly negative statement.

'That there is a very general impression among the inhabitants that the Dodo did exist at Rodriguez, as well as in the Mauritius itself; but that the oldest inhabitants have never seen it, nor has the bird or any part of it been preserved in any museum or collection formed in those islands, although some distinguished amateurs in natural history have passed their lives on them, and formed extensive collections. And with regard to the supposed existence of the Dodo in Madagascar, although Mr. Telfair had not received, at the time of his writing to Europe, a reply to a letter on the subject which he had addressed to a gentleman resident on that island, yet he stated that he had not any great expectations from that quarter; as the Dodo was not mentioned in any of his voluminous manuscripts respecting that island, which contained the travels of persons who had traversed Madagascar in all directions, many of them having no other object in view than that of extending the bounds of natural history.

J. S. D.



ART. LXIV. *Monograph on the Cypræidæ, a Family of Testaceous Mollusca.* By JOHN EDWARD GRAY, Esq., F.G.S.

[Concluded from p. 371.]

101. *Cypræa sphaericulata*.—Sphærical Cowry.

“Testâ subglobosâ, inflatâ, transversim striatâ; sulco dorsali nullo; labro exteriore marginato.” *Lam.*

*Cypræa sphaericulata.* *Lamarck, Ann. Mus.* xvi. n. 14. *Hist.* vii. 408.

Fossil near Fiorenzola.

This shell, according to M. Lamarck, resembles *C. Oniscus*, but it has not the dorsal groove, and the mouth is not dilated. Its length, according to the same authority, is 22 millimeters. It may perhaps be the *C. Pediculus* of Brocchi.

102. *Cypræa pisolina*.—Pea Cowry.

“Testâ globosâ, pisiformi; dorso lævissimo; labro exteriore marginato; rimâ curvâ, plicato-dentatâ.” *Lam.*

*Cypræa pisolina.* *Lamarck, Ann. Mus.* xvi. n. 17. *Hist.* vii. 408.

Fossil. Angers. *Menard.*

“Length of the largest specimens 5 lines.” *Lam.*

In M. DeFrance's duplicate collection, I observed a shell under this name, and was satisfied on examination that it was only a decorticated state of another shell that was considered as a variety of *C. pediculus*, in the same collection. When perfect it is very like my *C. scabriuscula*, but is smooth between the striæ, and like it has a narrow dorsal groove.

103. *Cypræa coccinelloides*.—Lady-Bird Cowry.

Testâ ovato-sphæroideâ, longitudinaliter striatâ; striis numerosis, acutis, continuis; aperturâ parum arcuatâ.

*Cypræa coccinelloides.* *Sowerby, Min. Conch.* iv. 107.

Icon. *Id. ib.* t. 378. f. 1.

Fossil. Suffolk Crag. *Leathes.*

“Shell ovate, spheroidal, transversely” [longitudinally] “striated; striæ numerous, acute, not interrupted; aperture slightly arched, not contracted in the middle. Size of a Pea.” *Sowerby.*

In the figures the axis is about  $\frac{4}{10}$ , diameter  $\frac{5}{10}$  of an inch.

M. DeFrance is inclined to consider this as a variety of *C. Europæa*, but it appears more closely allied to my *C. scabriuscula*.

104. *Cypræa retusa*.—Blunt Cowry.

Testa obovato-sphæroideâ, longitudinaliter striatâ, costatâ; striis elevatis continuis, remotis; aperturâ ad extremitatem angustam parum curvatâ.

*Cypræa retusa.* *Sowerby, Min. Conch.* iv. 107.

Icon. *Id. Ib.* t. 378. f. 2.

Fossil. Suffolk Crag.

“Shell obovate, spheroidal, transversely” [longitudinally] “striated; striæ elevated, uninterrupted, remote; aperture a little curved at the narrowest end; size-of *C. coccinelloides*; striæ seldom more than 8 on each side.” *Sowerby.*

The figure is  $\frac{3}{8}$  of an inch in length.

105. *Cypræa avellana*.—Hazel-Nut Cowry.

Testâ obovato-sphæroideâ, longitudinaliter striatâ; striis numerosis, remotis, elevatis; lineâ dorsali impressâ.

*Cypræa avellana.* *Sowerby, Min. Conch.* iv. 107.

*β. minor.*

Icon. *Id. Ib.* t. 378. f. 3.

Fossil. Suffolk Crag.

“Shell obovate, spheroidal, transversely” [longitudinally] “striated; striæ numerous, remote, elevated, interrupted by a longitudinal sulcus; aperture a little curved at the narrowest end; size of an hazel-nut.” *Sowerby.*

The figure is  $\frac{6}{8}$  of an inch long, and  $\frac{5}{8}$  broad.

The variety is  $\frac{1}{4}$  of the length, and the ribs are close and slender.

*Cypræa ovulata*, Lam. Ann. Mus. xvi. n. 18., (the *C. ovuliformis*, Lam., Hist. vii. 409,) is a *Marginella* of the same section as *Voluta lævis* of Donovan, and somewhat like that shell, which Montagu likewise placed in the genus *Cypræa*.

I have here brought together those fossil species only of this division which have been described by authors ; for after repeated examination of Mr. James Sowerby's and other collections, I found it quite impossible to come to any conclusion on the subject, in consequence of the imperfect state in which the specimens are generally found, and the gradual interchange of character which appears to take place between the species.

106. *Cypræa carnea*.—Flesh-coloured Cowry.

Testâ ovato-globosâ, inflatâ, roseâ, immaculatâ ; striis longitudinalibus lævibus ; lineâ dorsali nullâ ; aperturâ albidâ, amplissimâ, abbreviatâ ; dentibus inæqualibus.

*Cypræa*, n. 103. *Schroet.*, *Einleitung.* 158.

*Cypræa carnea.* *Gmel.*, *Syst. Nat.* 3418. (1). *Blainville*, *Dict. Sc. Nat.* xliii.

*Cypræa rosea.* *Mawe*, *Introd. Conch.* (2)

*Cypræa sulcata*, Junior. *Dillw.*, *R.S.* i. 467.

Le petit grelot à côtes. *Knorr*, vi. 29.

Icon. *Knorr*, vi. t. 15. f. 7. (1). *Wood*, *Catal. App. ined.* t. 3. f. 15.\* *Mawe*, *Introd. Conch.* t. f. (2)

Detrita. Testâ albidâ roseâ politâ.

*Cypræa ovulata.* *Lamarck*, *Ann. Mus.* xvi. n. 52. *Hist.* 398. n. 52.

Icon. *Enc. Method.* t. 355. f. 2. a. b.

*β. oblonga.* Testâ ovato-oblongâ.

*Inhabits* —————. *Mus. Brit.*, nost. &c.

Shell ovate-globose, inflated, thin, semitransparent, rose-coloured, spotless ; spire rather produced, white ; the longitudinal thread-like smooth striæ are continued over the centre of the back without any interruption ; base rather convex ; aperture white, very much dilated, shorter than the body of the shell ; outer lip rather thickened above, rounded, slightly incurved ; the teeth of the inner lip are small, close together ; those of the outer lip larger, rather distant, there being often an intermediate thread-like stria between each of those that form the teeth.

\* I am indebted to the kindness of Mr. Wood, for the opportunity of referring to the Appendix to his Catalogue, as yet unpublished.

Length  $\frac{5}{16}$ , breadth  $\frac{4}{16}$  of an inch.

The shell varies from ovate globose to ovate oblong: when young it is pale, rose-coloured, and quite smooth.

Mr. Dillwyn observes that Gmelin's *C. carnea* appears to be nothing more than *C. sulcata* in its immature state. The *C. carnea* may at once be distinguished from *C. sulcata* and from all the other striated Cowries, by its broad mouth and thin texture, and by the back being quite destitute of any groove, and never spotted.

I have a specimen which exactly agrees with Lamarck's description and figure of *C. ovulata*, which appears to be a worn state of this shell; it differs only in having the appearance of being more solid. It may be the worn or young *C. aperta*.

Blainville, in the Dictionnaire des Sciences Naturelles, has described from Duclos a species under the name of *C. rosea*, thus; "Très petite coquille, bullée, presque globuleuse, et d'une très jolie couleur rose." It may be this shell, but *très petite* can scarcely be applied to it. The only other rose-coloured Cowry that I know is *C. quadrimaculata*.

107. *Cypræa triticea*.—Wheat Cowry.

"Coquille a peine plus grosse que la précédente [Cypræa rosea] et d'un brun vineux partout."

"*Cypræa triticea*. Dufresne," Blainville, *Dict. Sci. Nat.* xliii. 25. Inhabits the West Indies.

I only know this shell by the above short notice.

108. *Cypræa australis*.—New Holland Cowry.

Testâ ovatâ, albidâ, tenui, maculis 5. v. 6. pallidé carneis pictâ; extremitatibus roseis; striis longitudinalibus tenuibus, lævibus; lineâ dorsali latâ, vix impressâ; aperturâ lineari, posticé subproductâ; dentibus æqualibus.

1. Incompleta. Testâ dorso lævigatâ politâ.

*Cypræa australis*. Lamarck, *Hist. Anim. sans vert.* vii. 404.

2. Junior. Testâ politâ roseâ.

Inhabits New Holland, common, MacLeay. Sandwich Islands, Capt. Lord Byron. Mus. Brit., nost. &c.

Shell ovate, white, thin, with rose-coloured ends, and the back

marked with 5 or 6 irregular, squarish, pale, flesh-coloured spots, three of which are placed on each side of the dorsal line; the striæ are longitudinal, thread-like, very thin, and smooth, leaving (in the perfect specimen) a broad but scarcely impressed dorsal line, so that the back appears nearly smooth. The base is rather convex; the aperture linear, a little longer than the hidden spire, and slightly curved towards it; the outer lip slightly thickened above, rather rounded; the teeth of both lips are nearly equal, minute, and close together.

Length  $\frac{6}{10}$ , breadth  $\frac{3}{10}$  of an inch.

When this shell is not quite full grown, or when it is worn, in which state it appears to have been described, the ribs do not reach the centre of the back, so that the dorsal line is not seen, and the surface is quite polished and smooth. Its texture, its rose-coloured ends, and large irregular dorsal spots, at once distinguish it from the other species.

109. *Cypræa aperta*.—Open Cowry.

Testâ ovato-globosâ, inflatâ, subvesiculosâ, albido-roseâ, immaculatâ; striis longitudinalibus plurimis, distinctis, subirregularibus, lævibus; lineâ dorsali impressâ, angustiore; basi convexâ; aperturâ amplissimâ.

*Cypræa Oniscus.* Lamarck, *Ann. Mus.* xvi. 103. *Hist.* vii. 402. not Dillw.

Incompleta, vel subdecorticata. Dorsio lævi, roseo.

*Cypræa aperta.* Swainson, *Bligh's Sale Cat.* 317. & *Append.* 18.

Icon. Wood, *Cat. Append. Ined.* t. 3. f. 10.

Inhabits the African Coast. Cape of Good Hope, Villet.

Mus. Brit., nost.

Shell ovate-globose, inflated, vesicular, pellucid, whitish rose colour, whiter beneath; longitudinal ribs many, distant, rather irregular, smooth, convex; dorsal line narrow, impressed; base convex; aperture very broad, as long as the hidden spire; inner lip scarcely toothed, concave; the front of the columella slightly incurved, the back slightly thickened and rounded; teeth rather large, distinct; the frontal groove and the concave part of the columella broad and smooth.

Length 1 inch, breadth  $\frac{8}{10}$  of an inch.

This shell is very well described by Lamarck, under the name of *C. Oniscus*, but his synonyma do not refer to it, and he has confounded it with the figures of *C. radians*. A worn specimen was also well described by Mr. Swainson, in the catalogue of Mrs. Bligh's Collection of Shells. I do not remember to have seen any perfect specimen, except those that were sold at the dispersion of the African collection, brought to this country by Capt. White, and disposed of by auction in Piccadilly, in 1823, and some which formed part of another African collection, brought home by Capt. Heaviside, and lately sold in the same manner.

110. *Cypræa lota*.—Washed Cowry.

“Testâ ovatâ, subturgidâ, lævissimâ, albâ; margine exteriore supra crenulato.” *Lam.*

*Cypræa lota*. *Lamarck, Ann. Mus. xvi. 99. Hist. 397. excl. syn.*  
*Inhabits the Asiatic Ocean. Lamarck.*

“Length  $7\frac{1}{2}$  lines.” *Lam.*

I have an apparently worn shell of this division, which agrees well with Lamarck's character above quoted. The figures represented in *Born*, t. 8. f. 4. 5. and *Martini*, i. t. 30. f. 322. and referred to by Lamarck, are certainly those of worn, or young shells, of the denticulated division, probably of *C. spurca*.

111. *Cypræa albella*.—Whitish Cowry.

“Testâ ovatâ lateribus dilatatâ, lævi; dorso ventreque albis; marginibus flavidis; infimâ facie planâ.” *Lam.*

*Cypræa albella*. *Lamarck, Hist. vii. 404.*

*Inhabits the Isle of France.*

Rather shield-shaped; the teeth shortened,

“Length  $7\frac{1}{2}$  lines.” *Lamarck.*

I have not seen any shell which appears to be referrible to this species.

\*\*\*\* *Ovuloidæ.*

112. *Cypræa Capensis.*—Cape Cowry.

Testâ ovatâ pyriformi, pallidé fuscâ; spirâ concavâ, impressâ; striis longitudinalibus confertissimis; aperturâ lineari; labio minutissimé denticulato; labro longiore, extus marginato.

Incompleta. Testâ pallidâ, lævi, sub-angulatâ; labro edentulo.

Icon. *Wood, Cat. App. ined.* t. 3. f. 18.

*Inhabits the African Coast.* Cape of Good Hope. *Villet.*

Shell ovate, pearshaped, pale brown, with an irregular-shaped dark liver-coloured spot on the centre of the back, ornamented with an immense number of crowded, very narrow, longitudinal striæ, continued over the back without any dorsal line; some of the striæ commence on the sides, as if they were branches from the sides of those striæ which proceed from the mouth; spire concave, umbilicated, exhibiting 4 or  $4\frac{1}{2}$  whorls; aperture linear, longer than the body of the shell, and bent towards the spire; inner lip without any other teeth than the narrow longitudinal lines, which are here more crowded than on the back of the shell; front of the columella with a very obscure concavity, which is striated all over; outer lip incurved, slightly thickened, and rounded on the outside; teeth rather large, distinct, rather darker, with several of the longitudinal lines between each.

Length  $\frac{13}{100}$ , breadth  $\frac{8}{100}$  of an inch.

When young this shell is pale brown, with three very obscure rather dark bands, the middle one near the centre of the shell; it is smooth and polished, with several distant raised lines, which form slight angular facets like those found in the *Lymnææ*; the inner lip is quite smooth, without any appearance of teeth. The outer lip, when formed, appears incurved, and shelving inwards, with about 18 or 20 obscure, slightly raised lines, like teeth, on its outer surface; these extend from the inner edge to the margin, where all, except the four or five front ones, which are divided into two slight branches, are lost in the surface of the shell.

This shell, in form, is somewhat like the *C. adusta* and *C. pyrum*, but differs in its peculiar teeth. In the latter respect, and indeed in many others, it is very like *C. Algoensis*, which is also an African species, and was brought to this country at the same

time. The latter, however, is quite smooth at the back, and never acquires any striated coat, or even a denticulated edge.

When I commenced this Monograph, I intended to have separated this species from the other Cowries, as a distinct genus, under the name of *Cypræovula* (Zool. Journal, i. 75) but on further consideration, I have been induced to change the opinion which I had then formed; for, on considering the very great differences which are found in the teeth of these shells, I must own I am very unwilling to make use of them as the distinguishing character of a genus. Indeed were it not for the peculiarity (which I believe I first pointed out) of the *Ovula* having the young shell always longitudinally grooved, I should be inclined to place them also in the same genus with the Cowries.

113. *Cypræa dactylosa*.—Finger-like Cowry.

Testâ tenui, oblongâ, cylindraceâ, obtusâ, longitudinaliter striato-costatâ; striis convexis, angustis, numerosis, alternatim minoribus, interstitiis lævibus.

*Cypræa dactylosa*. Lamarck, *Ann. Mus.* xvi. n. 13. *Hist. Anim. sans vert.* vii. 407. Defrance, *Dict. Sci. Nat.* xliiii. 37. 1826

*Cypræa* Gervillii. Sow. *Genera*.

*Georgii*. Testâ ovatâ subventricosâ.

*Cypræa* Georgii. Defrance, l. c.

Icon. Sow. *Gen. Shells*. t. *Cypræa*, f. 8.

Fossil. France. Grignon? Lam. Mouchy le Chatel? Defrance.

—β Nehou. Defrance. *+ Soward*

Shell nearly oblong, ovate, white, with numerous longitudinal rib-striæ, which are narrow, convex, and alternately smaller; they pass over the centre of the back without any interruption, and the spaces between them are quite smooth; the outer lip is slightly produced and rounded behind, slightly thickened and incurved; the inner lip slightly thickened and obscurely denticulated, the denticulations on both sides being caused by the ribs.

Axis  $\frac{12}{10}$ , diameter  $\frac{8}{10}$  of an inch.

The variety is shorter, more ventricose, and smaller, not exceeding 1 inch in length. M. Defrance now considers it only a variety.



114. *Cypræa elegans*.—Elegant Cowry.

Testâ tenui, subovato-oblongâ, obtusâ, albâ, cancellatâ, costato-striatâ ; striis numerosis tenuibus ; interstitiis concentricè striatis.

*Cypræa elegans.* *DeFrance, Dict. Sci. Nat.* xliiii. 39. *Sowerby, Genera of Shells.* (*Cypræa*).

Icon. *Sowerby, Gen. of Shells.* t. *Cypræa.* f. 7.

Shell oval ventricose, thin, white, behind blunt, rounded, cancellated, that is to say, longitudinally rib-striated with numerous narrow striæ, with the interspaces between them finely concentrically-striated ; the inner lip is thin, incurved, slightly produced, and rounded behind.

Axis  $\frac{8}{15}$ , diameter  $\frac{5}{16}$  of an inch.

115. *Cypræa rugosa*.—Wrinkled Cowry.

Testâ ovato-globosâ, tenui, gibbosâ, (lævi?,) infra longitudinaliter costatâ ; marginibus subincrassatis.

*Cypræa rugosa.* *Broderip, Zool. Journ.* iii. 84.

Icon. *Ib.* t. 4. f. 2.

Fossil. Turin? *Sowerby.* Mus. Brit.

Shell ovate globose, thin, back smooth (probably by the ribbed coat being broken off) ; the base and sides with numerous raised, rather irregular, longitudinal ribs ; teeth large subequal.

Axis  $2\frac{1}{2}$  inches, breadth  $1\frac{1}{4}$ .

The specimen above described, which is in the British Museum, is the same from which Mr. Broderip's lately published description was made. It does not strike me as having much affinity with *C. guttata*, but appears to me evidently to belong to the Ovuliform group.

116. *Cypræa Barcinensis*.—Barcelona Cowry.

Testâ subovato-globosâ, tenui, longitudinaliter costatâ, interstitiis lævibus.

*Cypræa Barcinensis.* *Koenig, Icon. Foss. Sect.* ii.

A sulcated Cowry. *Parkinson, Org. Rem.* iii. 53.

Icon. *Koenig, Ibid.* f. *Park. Ibid.* iii. t. 5. f. 24.

Fossil. Barcelona. Verona, *Park.* Mus. Brit.

Shell nearly spherical, slightly tapering in front, with several

thick, raised, longitudinal, uninterrupted ribs; the outer lip rounded. As large as a walnut.

A description and figure of this new species will appear in the second Century of Mr. Koenig's valuable work above referred to, which is now in the press.

---

To complete this Monograph, according to my original intention, it would now be necessary for me to proceed to the description of the species of *Ovula*. My notes respecting these were already prepared, when I was informed that Mr. G. B. Sowerby was on the eve of publishing a Monograph of that genus. The almost simultaneous appearance of a second work on the same subject would probably tend but little to the advancement of our knowledge, especially as both must resemble each other closely, the materials on which they are grounded being almost precisely the same. Several of the species, moreover, which I should have noticed as new, were furnished to me from Mr. Sowerby's cabinet, and as that gentleman was himself about to publish them, it would have been uncandid not to allow him the opportunity of first describing them. On these grounds I am induced to conclude here my contributions on the species of *Cypræidæ*, which must now be regarded as a Monograph of *Cypræa* alone. In that group I have included the species of which I had proposed at the commencement of this paper to constitute the genus *Cypræovula*.

Some additional species which have fallen under my notice since the publication of those sections of the genus to which they belong, together with corrections, and references to other synonyms, will form a useful Supplement to this undertaking, which I am now preparing for a future number of the Journal.

ART. LXV. *Description of a new species of Julis, Cuv.*

By E. T. BENNETT, Esq., F.L.S., &c.

JULIS. Cuv.

LABRUS, pars. L.

JULIS ARGUS.

*J. capite poroso, cæruleo lineato : corpore lineis longitudinalibus plurimis cæruleis, lineolisque nigris fuscisque transversis tessellato oculatoque : pinnis dorsali anulique ocellis hyalinis numerosis : caudá rotundatá.*

D.  $\frac{9}{21}$ . C. 13. A.  $\frac{2}{14}$ . P. 13. V.  $\frac{1}{6}$ .

Tab. XIII. f. 7.

The colour is fuscous above, becoming paler beneath : along the upper part above the lateral line extend two rows of small black spots, with a few slight pale-blue points : below the lateral line the whole of the body is marked by longitudinal blue lines, eight in number, between each of which pass transversely short lines, blackish above and fuscous beneath, dividing the surface into numerous *areolæ*, which are usually rounded at their angles, assuming the form of *ocelli*, especially towards their tail ; along these shorter lines the blue tint of the longitudinal ones is also frequently extended. The head is of a very pale blue colour, with three lines of a deeper blue on each side, the two lower running into a nearly transverse blue line which crosses the head behind the eye ; behind this latter line are three blue spots, one of which occupies the point of the *operculum*. The pores on the head are few in number, occupying the suborbital bone and the margin of the *præ-operculum*.

The dorsal and anal fins project moderately from the body, the former being of equal elevation throughout : they are blue at their base, becoming fuscous in the middle and paler fuscous at the margin : each of them is marked with three rows of transparent *ocelli*. The caudal fin is rounded, yellowish fuscous, with an abbreviated black subapical *fascia*. The pectoral fins are colourless, as are also the ventral, except on their lower edge where they are nigrescent.

The two middle teeth in each jaw are longer and stronger than the succeeding ones, which gradually diminish in size backwards : behind the middle ones in the upper jaw, and immediately adjoining to them are two smaller teeth ; there is also a strong sharp tooth at each angle of the mouth.

Described from a specimen preserved in spirit, which formed part of the noble collection brought from Sumatra by the late Sir T. Stamford Raffles.

ART. LXVI. *Analytical Notices of Books.*

*The Transactions of the Linnean Society of London. Vol. xv.  
Part the Second. 4to. pp. 200. Plates xviii.*

THE first paper in the present part which falls under our notice, is of a general nature, occupying the neutral ground common to both Zoologists and Botanists, and developing principles in the exposition of which each of these extensive classes is equally interested. It is "On Systems and Methods in Natural History," and is from the pen of the Secretary of the Society, J. E. Bicheno, Esq., whose observations are directed to show, that the artificial and natural systems aim at two very distinct objects, which are in some measure incompatible with each other : the one being intended to make us acquainted with individuals ; and the other, founded upon an acquaintance with individuals, to combine them according to their characters, so as to abridge the labour of reasoning, and to enable us to ascend from particular to general truths. Division and separation is the end of the artificial system : to establish agreements is the end of the natural. In one case we reason *a priori*, in the other, *a posteriori*. It has appeared to Mr. Bicheno, that many modern naturalists have not adopted these truths, and that it is the prevalent error of the day to attempt to generalise where they ought to analyse, while their arrangements, called natural, are

almost all of them framed with a view to distinguish. In illustration of this remark, he takes a rapid view of the plan pursued in the systematic works of De Candolle and Cuvier, and objects strongly to the repeated subdivisions which have recently been introduced, considering himself that class, order, genus, and species, are fully sufficient for all the purposes of a natural method. He also objects to the assumption, in the present state of our knowledge, that we have succeeded in assigning to each individual a certain place in nature; contending that although some natural groups are so evidently marked, that the individuals composing them are united by the operation of the mind at the first glance, yet that a mass will always remain which cannot be referred to families thus strikingly distinguishable. On this account he applauds the plan pursued by Jussieu, who candidly acknowledged that it exceeded his ability to assign their proper places to many genera, some of which he set aside as being altogether of uncertain situation, others as being merely allied to certain of his families, and a third portion as not having been yet sufficiently investigated to authorise him in pronouncing concerning them.

In this brief outline we have only attempted a sketch of the leading principles advanced by Mr. Bicheno, in the paper before us. It contains many facts and much reasoning, which demand for it the most careful perusal and consideration, but to which we cannot even allude. The remarks on the terms genus and species are especially valuable, and are adapted to excite the particular attention of those who have been in the habit of regarding these conventional words as indicating some real and immutable existence in nature, and not merely as convenient abstractions.

We now proceed to notice those papers the contents of which are purely zoological; arranging them according to the subjects to which they are devoted.

“An Account of a Pair of hinder Hands of the Orang Otang, deposited in the Collection of the Trinity House, Hull: by John Harwood, M.D., &c.,” describes, and gives the measurements of, these specimens, which appear to be the largest hitherto recorded, being fifteen inches and a quarter in length, and exceeding by upwards of an inch those noticed by Dr. Abel, in the Asiatic

Researches. Dr. Harwood also enters into a discussion of the question whether the *Simia Satyrus* and the Pongo are specifically distinct, or whether, as is generally conceived, the latter is merely the adult or advanced age of the former. He states the arguments which may be advanced in favour of each of these opinions, inclining himself to the belief that the animals belong to different species. In support of this view he urges the difference in the number of the lumbar vertebræ, the Pongo possessing five, while the *S. Satyrus* has but four: the differences in form of the clavicles and scapulæ of each: the great dimensions of the antrum Highmorianum in the *S. Satyrus*, which in the Pongo can scarcely be said to exist at all: and especially the direction of the orbits, and the proportion borne by them to the space which separates them. In the *S. Satyrus* the orbit is almost vertical; in the Pongo it forms an angle with the horizon of many degrees less: in the *S. Satyrus* the distance between the orbits is about one-sixth of the transverse diameter of the orbit; in the Pongo it is very nearly one-half. Adverting to the proportion borne in the Orang Otang by the extent of reach to the height of the animal, Dr. Harwood suggests the probability that the height assigned by Dr. Abel to the individual of that species described by him, may be greater than should really have been given to it; specimens measured by Dr. Harwood being far inferior to it in height, although their extent of reach fell not very far short of that mentioned by Dr. Abel.

The "Descriptions of two Quadrupeds inhabiting the South of Africa, about the Cape of Good Hope: by Andrew Smith, M.D.," are those of the *Hyæna villosa*, "with the body dusky-gray variegated by large black spots or oblique bands, with the neck yellowish, and the extremities marked by interrupted transverse black lines;" and of the *Hyrax arboreus*, "with the colour a mixture of reddish-brown and black above; white beneath; a white blotch near the middle of the back." The former of these is the Strand Wolf or Strand Jut of the colonists. In size and strength it is far inferior to the *Hyæna Crocuta*, which it resembles in habits, seldom however attacking the larger quadrupeds, and exercising its predatory propensities only on sheep,

goats, and similar animals. Dr. Smith describes the species at considerable length, and enters into much curious and interesting detail relative to the habits of an individual which he kept during a long period in confinement. The new species of *Hyrax* is rather larger than the *H. Capensis*. It is found in many of the forests of South Africa, and is occasionally seen coming out of holes of decayed trees, or standing upon the summits of such as have only trunks remaining.

The "Remarks on the *Antelope Chickara* : by Robert Hills, Esq., F.L.S.," give various particulars relative to a young animal of this species, the first living specimen of a four-horned Antelope ever brought to this country. The dimensions are given and the colour is described, as are also the horns, a point the more important, on account of the lower pair having been imperfect or injured in the specimens which fell under the observation of General Hardwicke and M. Duvaucel. A peculiarity is pointed out by Mr. Hills in the apex and *alæ* of the nose not being neatly distinguished from the hair-clad parts that surround them, the hairy covering becoming gradually shorter and shorter, without any distinct line of separation between it and the smooth parts. The figures of the animal, and of the head, which accompany the communication, are beautifully executed.

In his "Observations on the Tracheæ of Birds ; with Descriptions and Representations of several not hitherto figured : by Wm. Yarrell, Esq., F.L.S.," the authour chiefly directs himself to the illustration of five species. The whole of these are remarkable, and well merit the attention which has been bestowed upon them, but the combinations of structure exhibited in the first and in the last of them, are perhaps the most extraordinary. In the *Numida cristata*, Pall., that part of the furculum which descends from the junction of its branches, instead of being flat as in the common Guinea fowl, is found to be double, each branch appearing to extend on the side, so as to form with the corresponding expansion of the opposite one, an almost circular socket or pouch, into which the trachea descends, and after forming within it a circular sweep, ascends upwards and forwards to the projecting anterior part of the sternum. The trachea of the *Ardea Virgo*, L., the second

species illustrated by Mr. Yarrell, had been already figured by Dr. Parsons, in the Philosophical Transactions, but in that representation it was detached from the sternum. The figure now given shows it in its natural situation, which not only better exhibits its true character, but also furnishes a point of comparison with the nearly corresponding structure of the very rare *Anthropoides Stanleyanus*, Vig., the representation of which succeeds. The structure in the *Anas atrata*, L., is shown to be intermediate between that of the common, and that of the wild, Swan, the trachea descending, but so far only as the central circular portion of the furcula. In the *Anas semipalmata*, Lath., the extremely elongated trachea lies between the pectoral muscle and the skin, and a striking variation was observed between the two specimens examined by Mr. Yarrell. In the first of them it was situated on the left side, extending along its whole length, and possessing an extra convolution, the trachea elongating itself first along the second series of the four parallel longitudinal tubes formed by it, returning by the third, then curving successively downwards, backwards, and upwards, to the first series, and returning along the fourth: in this instance the left clavicle was shorter and wider than the right. In the second specimen the right clavicle was enlarged, and here the tubes were parallel without any extra convolution; the elongation of the trachea passing backwards along the third series, returning by the second, passing backwards again along the first, and returning by the fourth. Whether these particular dispositions of the trachea are uniformly accompanied by the deviations in the form of the clavicle which respectively accompanied them in these instances, can only be ascertained by repetitions of the dissections as often as opportunities occur. The paper is concluded by an outline of an arrangement of the British species of Ducks, founded upon internal as well as external conformation, in which two divisions are pointed out, and the species referrible to each are enumerated. As an abstract of Mr. Yarrell's views on this subject will be found in our report of the Proceedings of the Zoological Club, we refrain from entering here into particulars respecting them. In illustration of this part of the communication, we may however mention that figures



are given of several tracheæ of Ducks, including that of the *Anas rufina*, Pall., and of the free and lobated hind toes, which serve partly to characterize the proposed divisions.

The memoir "On two new Genera of Land Tortoises: by Thomas Bell, Esq., F.R.S., &c.," may be regarded as an appendix to the "Monograph of the Fresh-water Tortoises having a moveable Sternum," by the same authour, which appeared in the second volume of our Journal. In that paper Mr. Bell remarked, that the species of *Terrapene* would be found to constitute the intermediate affinities connecting the fresh-water with the land Tortoises. Among the latter he had however at that time been unable to detect any one possessing the slightest approach to the moveable structure of the sternum, which formed so prominent a character in the animals then under his consideration. Subsequent researches have shewn the correctness of his anticipation that such would eventually be discovered, by placing in his possession a true land Tortoise, in which the anterior lobe of the sternum is moveable, and he has also obtained specimens of two others in which a yet more curious conformation exists in the posterior portion of the dorsum being moveable on the anterior. The former is the type of his new genus *Pyxis*, and is described and figured under the name of *P. arachnoides*; and the two latter constitute the other new genus, *Kinyxis*. Both the latter are natives of Africa, and one of them, the *Kin. castanea*, "sterno anticè ultra testam superiorem prominente: scutis marginalibus 23," lived for some time in Mr. Bell's collection. The second species, the *Kin. Homeana*, is thus characterized, "K. dorso posticè gibbo: scuto marginali antico impari." Figures of each of the species accompany the communication.

"The Natural History of *Oiketicus*, a new and singular genus of *Lepidoptera*: by the Rev. Lansdown Guilding, B.A., F.L.S.," describes two very extraordinary insects, the perfect females of which are not only entirely apterous, but never even quit the puparium; receiving in it the embraces of their males, and depositing their eggs within its cavity. In their larva state they also exhibit another curious phænomenon, which however is not unprecedented even among the *Lepidoptera*, that of inhabiting

cases formed of dried leaves and twigs of plants tied together by threads into a cylindrical tube. It is chiefly by these characters that the two species are brought together; but, notwithstanding their agreement in these remarkable particulars, we cannot regard them as belonging to one genus. The first species, the *Oik. Kirbyi*, is evidently most closely allied to *Zeuzera*: the form, and especially the antennæ, of the male are almost identical with that genus: from its appearance we should not suspect any peculiarity in the female, were it not for the extreme length of the penis, which, it may be concluded, would not exist, unless rendered necessary by some unusual conformation or situation of the organs of the other sex. With *Zeuzera*, however, the second species, the *Oik. MacLeayi*, has nothing in common: this is distinctly one of the *Tineæ Bombyciformes*, a group among which a larva, that of the *Psyche fusca*, had long since been noticed in Europe as possessing a similar habitaculum. From this dissimilarity in the males of the only two species, we cannot regard the genus *Oiketicus* as yet fully established. Mr. Guilding expects to have it in his power to describe a third species: we hope that he may do so, and that he will continue to direct his attention to the two which he already possesses, with the view of confirming or correcting his opinions relative to the affinity which he has assumed as existing between them. The illustrative figures are numerous, and occupy three plates.

Of the "Observations and Experiments, made with a view to ascertain the means by which the Spiders that produce Gossamer effect their aerial Excursions: by John Blackwall, Esq., F.L.S.," we abstain from giving an analysis; a sufficient abstract of this interesting paper having been already given at page 296 of our present volume.

One other paper alone remains to be noticed. It is "Of the Insect called Oistros by the ancients, and of the true species intended by them under this appellation: in reply to the Observations of W. S. MacLeay, Esq., and the French Naturalists: To which is added, a Description of a new species of Cuterebra: by Bracy Clark, F.L.S., &c." From the tone, as well as the title, of this production, it is evident that its authour intended to cor-

rect errors into which he supposes Mr. MacLeay to have fallen in his memoir "On the Insect called Oistros by the Ancient Greeks, and Asilus by the Romans," which was inserted in the 14th volume of the Linnean Transactions, and briefly analysed in the first volume of the Zoological Journal. In the substance of Mr. B. Clark's paper there is, however, nothing which even tends to invalidate the deductions of Mr. MacLeay; on the contrary, it is adapted to confirm his leading position, so far at least as bare assertion can confirm proofs almost amounting to positive. "It is more than probable, nay, almost certain," says Mr. Clark, "that if Aristotle, Ælian, or Pliny, described an insect—with a trunk or proboscis, they knew nothing about the true *Æstrus Bovis*." That they did describe under the name of Oistros an insect having a proboscis, was shewn by the quotations brought forward by Mr. MacLeay from Aristotle, Ælian, and Æschylus. Of course then, even on Mr. B. Clark's own statement, the Oistros of the ancient Greek writers was not the *Æstrus* of Linné, of which, according to him, they knew nothing. Mr. MacLeay proceeded further. Having shown what the Oistros of the ancients was not, he endeavoured to ascertain what it was; and as that insect possessed not only a proboscis, but a very powerful one, capable of piercing through the hides of cattle, and of sucking the blood from beneath them, he regarded it as probably a *Tabanus*, L., and from other circumstances, unnecessary to be mentioned here, was induced to suspect strongly that it was some species of the modern genus separated from that group, under the name of *Hæmatopota*. To all this Mr. B. Clark says nothing, except that no *Tabanus*, *Hæmatopota*, or certain other Dipterous Insects, which he names, but to which no allusion was made by Mr. MacLeay, could produce those effects which are described by Virgil, as resulting from the approach of his Oistros and Asilus. This, however, is quite extraneous to the question discussed by Mr. MacLeay. That gentleman proposed to himself to ascertain as nearly as possible the precise insect known at a given early period by certain names; and the enquiry as to the real cause of the effects ascribed to it by the poets, formed no part of the object of his investigation. Yet even in his incidental remark on the proba-

bility that some of the ancients should "have seen the perfect insects of the modern *Æstrus* flying about cattle, and that they should have witnessed the extraordinary agitation which they produce," he shews himself in a few words sufficiently acquainted with the very subject which Mr. B. Clark labours through pages to bring to his notice. In the controversial part of his paper Mr. B. Clark has therefore advanced nothing which is calculated in the slightest degree to enlighten the antagonist whom he has chosen to create for himself. His readers will find that its novelties consist in the description of a new species of his genus *Cuterebra*, (*Cut. fontinella*, thorace atro, lateribus albis; abdomine violaceo, ultimis segmentis albis, nigro-punctatis,) which infests the Rabbits of the Illinois; in the mention that the *Æstrus lineatus*, Meig., is the *Æst. Bovis*, Clark; in certain other observations relative to the synonymy of this genus; and in the suggestion that the *Æst. Bovis* may produce a shrill sound, he having been informed by a friend that he once heard it. On this latter point Mr. Clark however still entertains doubts.

The "Extracts from the Minute Book," which conclude the volume, contain a notice by Mr. C. Willcox, of the naturalization in Portsmouth Harbour of the *Mytilus bidens*: corrections by the Rev. Lansdown Guilding to his generic character of *Ascalaphus*, to his specific character, description, and history, of *Asc. Macleayanus*, and to his papers on *Xylocopa Teredo*, &c., and on *Onchidium*: and extracts from a communication on the Locust which lately devastated the Crimea and the Southern Provinces of Russia, presented by J. Smirnov, Esq., F.R.S., &c. The latter furnishes a history of the insect from its egg to its perfect state, and of the means, usually ineffectual, employed for its destruction, or for the dispersion of its innumerable swarms.

---

*Journal of the Academy of Natural Sciences of Philadelphia.*  
*Vol. v. Part i. Philadelphia, 1825. 8vo. pp. 204. Plates viii.*

IN the present part of a volume of these Transactions the zoological papers are as numerous as in any of those which have pre-

viously fallen under our notice. As on former occasions, we arrange our analysis of them according to the rank in the scale of organisation of the subjects to which they are devoted.

A "Note on the genus *Condylura* of Illiger: by J. D. Godman, M.D.," describes minutely several external characters peculiar to the *Cond. cristata*, which had been previously overlooked; particularly the form of the external ear, which, although it is destitute of auricle, is very extensive, and is situated at a short distance from the shoulder in the broad triangular fold of integument connecting the fore-arm and head; the form and situation of the scales on the anterior and posterior extremities; the enlargement of the carpal edge of the palm by an elongation of the integuments: and the existence of five circular distinct spots on the soles. The differences in several respects between this genus, and *Scalops* and *Talpa*, are also pointed out by Dr. Godman, who remarks that its name is founded on a mistake, the knotted appearance of the tail not being distinguishable in the recent state. It is the authour's opinion that one species alone, the *Cond. cristata*, is found in the United States, he being convinced that the *Cond. longicaudata* of Pennant is a nominal species founded on a stuffed and dried specimen in which the nasal radii were shrunk and distorted.

The ornithological papers are all from the pen of the Prince of Musignano. They are three in number, and two of them require only a brief notice from us, the works in which they have since been embodied having already passed under our review; the "Observations on the nomenclature of Wilson's Ornithology," the continuation of which here given embraces a portion of the Water Birds; and the "Additions to the Ornithology of the United States," referring to six species collected in Florida, which have since been figured and fully described by the Prince in his American Ornithology. The "Notes to the paper entitled Descriptions of ten species of South American Birds," mention certain peculiarities in which the bird there referred to as the *Picus rubricollis* varies from a specimen of that species recently obtained; and also state that the *Rallus nigricans* of that paper is not the *Ral. nigricans*, Vieill., as had been supposed, but a new

species, *Ral. melanurus*, "fusco-ardosiaceus; collo supra brunneo; dorso, alisque brunneo-olivaceis; remigibus rufescentibus; tectricibus alarum inferioribus rufis nigro-fasciatis; uropygio, crisso, caudaque nigris;" and is nearly allied to the *Ral. chiricote* of Vieillot, of which the following character is given, "capite colloque plumbeis; dorso, alisque brunneo-olivaceis; remigibus rufescentibus; tectricibus alarum inferioribus rufis nigro-fasciatis; pectore, abdomineque pallide rufis; uropygio, crisso, cauda, femoribusque nigris."

The "Description of a new species of Salamander; by Jacob Green," is that of the *Salamandra tigrina*, "cauda longiuscula: corpore, supra nigricante cum maculis flavis, subtus cinereo et luteolo." It is closely allied to the *Sal. subviolacea* of Barton, and has also some resemblance to the *Sal. terrestris* of Europe, but wants the tubercles on the skin possessed by the latter.

Another paper on the *Reptilia* is from the pen of Dr. Harlan. It is entitled "Description of a variety of *Coluber fulvius*, L., a new species of *Scincus*, and two new species of *Salamandra*." The variety of the *Coluber* is described as having eighteen deep black rings, with as many scarlet or blood-red intervening ones, separated by narrow rings of whitish-yellow bands. The *Scincus* is the *Sc. unicolor*, which is dark silvery gray throughout; with the head small; the snout acute; and the tail about the length of the body. The *Salamandrae* are the *Sal. cylindracea*, "blackish, clouded with confluent white blotches on the sides; head thick and oval; tail cylindrical, longer than the body; all the toes fissile:" and the *Sal. symmetrica*, "dusky-brown or fuscous above; orange-yellow beneath; a row of deep orange-coloured spots on each side of the spine, symmetrically arranged; tail compressed, longer than the body." Both the latter inhabit South Carolina.

For the ichthyological papers the Academy is indebted solely to C. A. Lesueur. They consist of the "Description of a new species of the genus *Saurus*," the *S. minutus* from the Isle of France, a figure of which is given: "Descriptions of four new species of *Muraenophis*," the *Murr. macularia*, *Zebra*, and *ocellata*, from Barbadoes, all of which are figured, and the *Mur. Bengalen-*

sis: and "Description of a new Fish of the genus *Salmo*," the *Salmo microps*, which is proposed as the type of a new sub-genus, HARPADON, with the "Jaws, tongue, pharynx, wings of the palate, and vomer, armed with moveable, slender, curved teeth; those of the jaws barbed." A figure of this fish, which is from the East Indian Seas, accompanies the description.

The contributions to the department of the *Invertebrata* are wholly from the pen of the indefatigable Thomas Say. Two of them are entomological, one has reference to the *Mollusca*, and another to the *Radiata*. In his "Descriptions of new species of *Hister* and *Hololepta*, inhabiting the United States," Mr. Say describes twenty-one species of the former, and two of the latter, genus. His "Descriptions of new species of Coleopterous Insects inhabiting the United States," extend to about one hundred, all of which, except two, are pentamerous. The whole of them are referred to established genera, although in one or two instances differences of structure are pointed out which might have authorized the proposition of new groups for the reception of the individuals in which they were found to exist.

The "Descriptions of some new species of Fresh Water and Land Shells of the United States," extend to nineteen, some of which are deserving of particular notice. One of them, a *Melania*, forms a second species of Mr. Say's proposed genus *Anculotus*: another is a *Fusus*, which exhibits the anomaly of living in fresh water only: and a third constitutes a link intermediate between *Alasmodonta* and *Anodonta*, the primary teeth being obvious when the shell is young, but when it arrives at its full growth becoming obsolete, and in some instances not at all visible.

In his paper "On the species of the Linnean genus *Asterias*, inhabiting the Coast of the United States," Mr. Say describes six species of *Asterias*, Lam., five of which are new; ten of *Ophiura*, Lam., one only of which is suspected to have been before noticed; another species of this genus from the West Indies; one species of *Euryale*, Lam.; and one of *Alecto*, Leach.

---

*Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin. Aus dem Jahre 1824. 4to. Berlin. 1826.*

THE Transactions of the Berlin Academy for 1824 offer only three Papers on subjects connected with Zoology. Two of these are from the pen of the celebrated anatomist Rudolphi; and the third is the production of M. Lichtenstein, the equally zealous and active director of the noble Museum of Natural History, which has, chiefly by his exertions and under his auspices, been formed in that city,—a Museum of the value and extent of which the Catalogue of the Zoological Duplicates, published by him a year or two ago, forms a certain but necessarily far from adequate criterion.

The two papers contributed by M. Rudolphi are, as might be imagined, entirely anatomical: they both, however, relate to subjects of general scientific interest. It would be superfluous, in the brief notice which we can afford them, to enter into their details: we shall, therefore, merely observe that the object of the first is to furnish additional proofs in support of the now almost universally received opinion that the Orang-Otang differs from the Pongo in nothing but in age; and that the second contains an account of the anatomy, more particularly of the nervous system and electrical apparatus, of the *Silurus electricus* L., two fine specimens of which, taken in the Nile, were sent home by MM. Ehrenberg and Hemprich. Both papers are illustrated by excellent figures.

Professor Lichtenstein's Paper "On the Antilopes of Northern Africa, more particularly as regards the knowledge possessed of them by the Ancients," contains full and minute descriptions, and is accompanied with elegant representations of four species of this beautiful and interesting group of Ruminants, with specimens of which the Berlin Museum had been enriched by the exertions of the same enterprising travellers. They are the *A. Leucoryx*, *A. Dama*, and *A. Dorcas* of Pallas, and a fourth which M. Lichtenstein regards as new to modern science, but identical with the *Strepsiceros* and *Addax* of Pliny, and to which he has assigned the specific name of *Addax*, the former synonym of *Strepsiceros* having



been before (in his opinion, mistakenly) applied by Pallas to a species from Southern Africa. We may here mention that our authour is firmly convinced that the corresponding races of Antilopes which occur in the North and in the South of Africa respectively, are positively and specifically distinct; and consequently that it is impossible that the animal described by Pallas should be one and the same with that indicated by the Roman Naturalist. However well founded this opinion may be, and M. Lichtenstein states it with all the warmth of a favourite theory, there is some reason to doubt the absolute novelty of the animal of which the description is here given from a full grown female. In form and comparative measurement it very closely corresponds with that described and figured by Dr. Otto in the 12th volume of the Transactions of the Leopoldino-Carolinean Academy, under the name of *A. suturosa*, of which a notice will be found in our present volume, p. 251. The remarkable thinness and shortness of its hair, and the total want of the sutures which form so striking a feature in Dr. Otto's animal, are by no means, as our authour himself confesses, certain marks of distinction; the circumstance of the latter having been brought when very young from its native climate, Syria, into the colder regions of Europe, being alone sufficient to account for the length and thickness of the covering with which nature had provided it, and perhaps also for the peculiar manner of growth of that covering. The extreme and disproportionate breadth and flatness of the hoof which M. Lichtenstein regards as characteristic of his species, is a more important point of difference, no such formation being observable either in the description or the figure published by Dr. Otto. Still these are trivial characters on which to found a specific distinction; and it is clear, from his supplementary observations, that the authour himself feels inclined to regard the one as a mere variety of the other. We regret that, following an usage too prevalent among his countrymen, he has not thought fit to point out its essential characters in a specific phrase, which we will not run the hazard of compiling from his description. We trust, however, that this neglect of the example set by the great master of modern Natural History in one of those very points, by means of which he suc-

ceeded in rescuing the Science from the darkness and confusion into which an opposite practice had in no small degree contributed to plunge it, will not become general. Were it to do so, it would unquestionably tend to retard the progress of knowledge, by rendering it more difficult of acquisition. In the present instance this oversight, for as such alone can we consider it, will in all probability be repaired when M. Lichtenstein shall favour the Zoological world with the revision of the entire genus which he states it to be his intention to publish.

To his admirable illustrations of those passages in the writings of the Ancients, in which the animals of this genus are noticed, we can only refer as presenting the results of extensive reading, skilful combination, and plausible conjecture.

---

*Histoire Naturelle des principales Productions de l'Europe Méridionale,—et particulièrement de celles des Environs de Nice et des Alpes Maritimes ; par A. Risso. Tomes iii. et v.*

Like the fourth volume of this useful work, which was noticed in our last number, the third and fifth are also entirely devoted to Zoology ; the third embracing the whole of the *Vertebrata* of the district of Nice, and the fifth, the *Invertebrata*, with the exception of the *Mollusca* and the *Annelida*.

In the list of *Mammalia*, which extends to fifty-nine species, the only novelties are two species of *Delphinus*: one of them, the *D. Bayeri*, having been originally figured and described in the *Acta Medica Academiae Cæsareæ Naturæ Curiosorum*, and since erroneously referred by Cuvier to the genus *Physeter*, Lacép. ; and the other, the *D. Desmaresti*, “dorso carinato, abdomine rotundato, rostro elongato ; maxillâ inferiore longiore, dentibus duobus conicis armatâ,” having been first noticed by M. Risso. The approximation of the latter to the *D. diodon* of Hunter is evident from the specific character ; it differs in the flatness of its head, in the strength and great elongation of the lower jaw, in the acuteness of its pectoral fins, and in the white lines which

variegate its under surface. Figures of this species, of the *D. globiceps*, and of the *D. Risso*, accompany the descriptions.

Of Birds, the number is considerable, amounting to three hundred and five species. Many of them are however birds of passage, which merely cross the district of Nice during their periodical migrations. This department of the work exhibits little more than a list with references to the principal authors by whom each species has been described and figured. In some instances, when a bird is doubtfully referred to a named species, its description is given in detail; and the same plan is followed in a few others, where M. Risso, although he has given a name, still hesitates whether to consider the birds as any thing more than varieties. Three only are noticed as altogether new, the *Currucæ torquata* and *rubricilla*, and the *Fringilla incerta*.

Of *Reptilia* thirty-eight are enumerated, including a very large proportion of new ones. These are the *Lacerta Merremia* and *L. fasciata*; *Gecko meridionalis*; *Seps chalcidica*; *Anguis cinereus* and *A. bicolor*; *Coluber strigatus*, *C. rupestris*, *C. guttatus*, and *C. palustris*; *Rana maritima* and *R. alpina*; and *Bufo ferruginosus* and *B. tuberculosus*.

In the ichthyological department of his work, M. Risso assumes a yet higher ground. His intimate acquaintance with the Fishes which inhabit the Mediterranean Sea had already been sufficiently proved by his former production on the Ichthyology of Nice, a work which established his fame as one of the first practical observers in this neglected though interesting branch of Zoological knowledge. In his present work he advances still further, in the description of additional species, which have since been presented to his notice, and in giving characters to several new genera, which it has appeared to him necessary to propose for general adoption. His list now extends to three hundred and eighty-two species, and might probably have been still increased by the addition of fresh-water fishes, for it is difficult to conceive that the number of these can be so limited as it appears to be from his enumeration. Of the Linnæan genus *Cyprinus*, for instance, only four are mentioned, one of these being the universally domesticated *C. auratus*, while our own rivers present us

with no less than thirteen. Characters and descriptions are given of the whole of the species, and references are made to the authors by whom they have been described and figured, especially to Rondeletius, whose faithful and spirited though sometimes rude representations, are thus rendered available to modern science. The local names are also given, the uses to which they are applied are stated, and the modes employed for their capture and preservation are particularized. In this section of the work every thing is in fact attended to which could tend to make it complete. It is illustrated by figures of forty-seven of the species described in it.

The *Crustacea*, two hundred in number, are treated with the same detail as the Fishes, and thirteen of them are figured in the illustrative plates. They also had been the subjects of a former work by M. Risso, which it is the object of his present Natural History of them to reproduce in an improved form, with the addition of such species as have been since discovered by him. Extensive as was his former list, the additions here made to it are numerous. In this department also there are a few new genera; but they are less frequent than in most of the other classes of *Invertebrata*, the authour having adopted the whole of those so ably described by Dr. Leach.

To Dr. Leach he is also evidently indebted for much assistance in his species of the *Myriapoda*, *Scorpionidæ*, and *Arachnida*: and he especially acknowledges the aid of our distinguished countryman in his notice of the Insects captured in the district. This latter extends to only about sixteen hundred species, and exhibits merely a list of their names in Latin and French, except where a very few new ones are characterised and described. Of such there are only thirty-four, and among them are included the thirteen species of *Formica*, and three of *Culex*, described by Dr. Leach at page 289 of our second volume. One new genus of *Orthoptera* is proposed under the name of *Phantoma*: it is nearly allied to *Phasma*.

The list of *Vermes* embraces seventy-five species, ten of which are stated to have been hitherto unnoticed. The *Radiata*, one hundred in number, including those which are found only in the

fossil state, exhibit about twenty new species, and are illustrated by twelve figures. The Table of Zoophytes is yet more extensive, amounting to two hundred species: nearly one half of these are new, and several of them are referred to new genera. The illustrations to this department are equally numerous and well executed, as those which are given to the other orders.

At the conclusion of our notice, we repeat the remark with which it commenced; the work of M. Risso is worthy of its authour, to whose deserved reputation it is calculated to add considerably. Availing himself most zealously of the opportunities afforded by his fortunate location of becoming intimately acquainted with Nature in her infinitely varied productions, he has not limited his ambition to the bare possession of specimens of them, but has aimed at communicating to others the knowledge he has himself acquired from their contemplation. If in so doing he may have erred occasionally, especially in too minute a subdivision, as well of species as of genera, the error, although to be deprecated by every one who wishes well to the progress of zoological knowledge, can by no means be put in competition with the good he has effected by his really valuable publication.

ART. LXVII. *Proceedings of Learned Societies on subjects connected with Zoology.*

ROYAL SOCIETY.

November 15, 1827.—The Croonian Lecture, by Sir E. Home, Bart., V.P., was read, entitled *On the Muscles peculiar to organs of sense in particular Quadrupeds and Fishes.*

The authour selected for the subjects of this lecture the peculiarities in the muscular structure of the tongue of the *Xariffa* or *Camelopardalis Giraffa*, an inhabitant of Soudan in Africa; and a muscle belonging to the eye of the *Cobitis anableps*, a fish inhabiting the rivers of Surinam, and called by the natives "the four-eyed fish."

The tongue of the Giraffa, besides being the organ of taste, has many properties of the proboscis of the Elephant. The latter is incapable of elongation it is true, while the former may be extended to seventeen inches in length. The authour observes, that some mechanism must exist by which this elongation can be performed, but that an opportunity of examination after death would be requisite to decide on its nature. The tongue of rein-deer offers an analogy to this, the cause of which, however, he has not been able to trace for want of time. The chamæleon can dart out its tongue to the extent of twelve inches, and for this purpose, as well as to direct its motion, it has a conical bone inclosed in a muscular tube, the fibres of which are circular, and aid by their pressure to make the bone slide forwards. The Giraffa wants the receptacle for water, which the Camel and Dromedary possess, this organ being unnecessary for it as it feeds on succulent plants; neither has it the padded hoof to fit it for travelling in sand, but two toes defended by a horny covering, to enable it to climb rocky ground without stumbling. Its long neck consists of only seven bones, being the same number that occurs in the human skeleton. The tongue is very smooth and slightly adhesive; it is spotted, but the spots are not raised. Its favourite food is the Acacia tree, of that species now called *Acacia Xariffa*, which has a pleasant flavour both boiled and raw, and the twigs of which are succulent. The tongue, being much exposed to the sun, has a black rete mucosum to prevent its being blistered. Drawings, by Mr. Cross, exhibit the mode in which it lays hold of the branches of trees. It drinks milk, first rincing out its mouth with a portion, and rejecting that so employed. It chews the cud, its body being then recumbent, and its head and neck erect.

The organ of vision of the *Cobitis anableps*, is very remarkable. The authour first exposes the errors of Artedi and his followers in their description of this animal: he then states that the cornea being removed, the iris is exposed, which has an appearance of two pupils. On more accurate examination, this appearance is seen to arise from two lateral projecting portions,

folding over each other in the middle, thus dividing the aperture into two. They do not however unite; and in some specimens, being less elongated, they leave the pupil entire, but very narrow in the middle, forming two opposed ovals, broad at their ends but narrow at the point of junction. Usually, however, there are two distinct apertures. The crystalline, instead of being spherical, is not even circular, having a small projection at the lower edge, directly behind the smaller aperture. When examined in the microscope, a small bundle of muscular fibres is seen coming from the capsule of the vitreous humour in the lower part, and entering that of the crystalline just at the disc where the smaller curve joins the larger one; the action of this muscle being to bring the lower mammillary process of the lens downwards and backwards into the centre of the lower aperture in the iris; thus constituting a complete organ for vision at near distances, independent of the part of the lens opposed to the large aperture, which is destined for more distant objects.

The authour regards this structure as destined to a similar purpose with that of the marsupium in Birds; viz. to obviate a difficulty arising from a want of motion in one direction in the ball of the eye. He considers that by its means also the fish, when lying with its eye-ball above the surface of the water, may enjoy distinct vision both in air and water, by the motions of the crystalline and eye-ball, combined with the adapting power of the two apertures of the iris to a circular form.

Nov. 22.—A Paper was read *On the structure of the Knee-joint in the Echidna setosa and the Ornithorhynchus paradoxus*; by G. Knox, M.D., &c., communicated by Sir James MacGregor, F.R.S.

After a short review of the labours of comparative anatomists on the animals which are the subject of this memoir, the authour describes a peculiarity of structure which was discovered by his brother in the knee-joint of the *Echidna*, consisting of an extension of the ligamentum adiposum, or re-duplication of the synovial membrane, transversely across the whole joint, dividing it into two cavities which have no distinct communication with each other. The articular surfaces of the upper cavity are the

patella and the anterior portions of the condyles of the os femoris, while the lower are formed by the inferior and posterior surfaces of these condyles, the upper surface of the tibia, and the semi-lunar cartilages. In the *Ornithorhynchus paradoxus*, the double fold of the synovial membrane extends only half-way across the joint, thus constituting an intermediate link of gradation between the *Echidna* and Man, in whom the ligamentum adiposum is wholly within the joint.

Nov. 30.—The Society proceeded to the election of a Council and Officers for the year ensuing; when on examining the lists, the following was found to be the state of the ballot:

Members of the old Council to continue.—Davies Gilbert, Esq., M.P.; Capt. Francis Beaufort, R.N.; John George Children, Esq.; Sir Humphrey Davy, Bart.; John F. W. Herschel, Esq., M.A.; Sir Everard Home, Bart., V.P.; Capt. Henry Kater, V.P.; John Pond, Esq., A.R.; William Prout, M.D.; William Hyde Wollaston, M.D., V.P.; Thomas Young, M.D., Foreign Sec.

Members of the Society chosen into the Council.—Francis Baily, Esq.; the Rev. William Buckland, D.D.; Charles, Lord Colchester; John Wilson Croker, Esq.; William Henry Fitton, M.D.; the Rev. Edmund Goodenough, D.D.; John Guillemand, Esq.; John Ayrton Paris, M.D.; Peter Mark Roget, M.D.; Capt. Edward Sabine, Roy. Art.

Officers for the ensuing year:—*President*: Davies Gilbert, Esq., M.P.—*Treasurer*: Capt. Henry Kater.—*Secretaries*: Peter Mark Roget, M.D.; Capt. Edward Sabine.

---

LINNEAN SOCIETY.

November 6, 1827.—A paper was read, entitled, *Remarks on the Antilope Chickara*; by Robert Hills, Esq., F.L.S. This paper has since been printed in the Society's Transactions.

Nov. 20.—A Letter from J. Creswell, Esq., F.L.S., was read, in which it was mentioned that a fish, unknown to the oldest fishermen, and weighing one hundred weight, had been taken in



the river Ex. It is supposed to be the fish called Ombrina in the Mediterranean; the *Sciæna cirrhosa*, Linn., *Umbrina* of Cuvier.

A Paper was read on *The generic characters of Formicaleo of Dr. Leach, with the Description of two new species*; by the Rev. Lansdown Guilding, B.A., F.L.S., &c.

The writer states, that although the larvæ swarm under every rock and shelter in the island, not a single perfect insect has been found flying abroad. The two new species are, 1. *Form. Leachii*, fuscescens, flavido-maculatus, alis hyalinis, subfalcatis, immaculatis; neuris ciliatis: oculis cupreis, pedibus pallidis: and 2. *Form. tarsalis*, nigro-fuscescens, flavido-maculatus, alis hyalinis, immaculatis, subfalcatis; neuris interruptè nigris; stigmatè nigro: pedibus flaventibus, atro-variis. It inhabits Demerara.

Dec. 4.—A Paper *On the locomotive Power of the Snail*; by Mr. James Main, was read. The authour mentions the following species as having chiefly come under his notice; *Limax maximus*, *Lim. ater*, *Lim. lichenivorus*, *Lim. rufus*, *Lim. mutabilis*, *Lim. tenax*, and *Lim. agrestis*. The belly of the snail being perfectly smooth, there are no appendages to do the office of feet; and the whole of the body moves at once, and not in parts successively. By placing the animal on a piece of glass, Mr. Main was enabled to observe a muscular motion; but this, instead of being from head to tail, was directly the reverse, so that the animal's motion cannot be caused by impulses in the direction of its progress. He gives, in conclusion, two conjectures as to the cause of the animal's motion; namely, 1st, that the body is moved forward by the retromissive discharge of slime, which, being emitted simultaneously from every part of the under surface, he conceives may exercise a force adequate to the propelling of the animal: or 2ndly, from its power of forming its lower surface into segments of circles along the whole of its length; and thus, by assuming a vertical vermicular action on the plane of the sustaining surface, impelling the body forward by alternate contraction and expansion. As dry air de-

prives the animal of motion, Mr. Main is inclined to consider the first surmise the more probable.

An extract was read from a Letter from Dr. Rigby to Mr. R. Taylor, dated Berlin, on the ova of the *Hirudo medicinalis*. It was accompanied by some specimens.

*An Account of Margarodes, a new genus of Insects found in the neighbourhood of Ants' Nests*; by the Rev. Lansdown Guilding, B.A., F.L.S., &c. was also read. Mr. Guilding, (after quoting Dr. Nugent (Geol. Trans. vol. v. p. 463), who states that the *ground pearl*, improperly supposed to be fossil, is found in prodigious quantities in the furrows of the land in Antigua when newly turned up, and suggests that it may be the production of an insect,) informs us that he has succeeded, by watching some that he preserved in moist marl, in detecting the insect which issued from them. He conceives it to be a parasite on the ants, whose formidable numbers in the dry islands they are calculated to keep down. The entire want of a mouth is remarkable in this new insect, the food being absorbed by tubes in the fore-claws. It also possesses the extraordinary power of throwing out long filaments, when in dry situations, supposed to be for preserving itself by obtaining moisture. Its scales effervesce and disappear in nitric and muriatic acid; sulphuric acid turns them black; and vinegar slowly decomposes them. In flame they burn like horn. Mr. G. is uncertain at present what station is to be assigned to this insect.

Dec. 18.—Three new species of Land Tortoises were exhibited by Mr. Bell; *Testudo pardalis*, *Test. actinodes*, and *Test. tentoria*; described by that gentleman in the last number of our Journal.

Jan. 15, 1828.—Some specimens of *Janthinæ* were exhibited by L. W. Dillwyn, Esq., washed ashore in July last in Oxwick Bay, near Swansea, many of them picked up alive, and yielding a beautiful dye. Specimens of the *Medusa Velella* and *Med. Navicula*, were found with them.

---

## ZOOLOGICAL CLUB OF THE LINNEAN SOCIETY.

January 23, 1827.—A paper was read, entitled *Observations on the Tracheæ of Birds, with descriptions and representations of several not hitherto figured*; by William Yarrell, Esq., F.L.S. At its conclusion Mr. Yarrell proceeded to illustrate its subject by references to numerous specimens of the Skeletons, Tracheæ, and other organs of Birds, which he exhibited to the meeting. In the course of his observations he adverted to the lengthened form of the tracheæ in the Cranes, Swans, and some Geese, and remarked that the true nature and use of these convolutions were but little known; the birds in which they exist not appearing to possess any peculiar powers in connexion with them, except harsh and loud voices: the more complex the structure of the trachea, the more disagreeable in fact was the sound transmitted through it. He then explained at some length the anatomical distinctions upon which he had founded his arrangement of the species of Ducks, and pointed out the leading characteristics of each of the principal divisions proposed by him. The thick and strong muscular gizzard with its small internal cavity in the herbivorous species presented a striking contrast to the thinner sides and more enlarged cavity of the same part in those feeding upon fish: the latter gradually approaching in structure to the stomach of the Mergansers. With these variations in the organisation of the stomach those of the intestines and cæcal appendages were shown to correspond, the latter diminishing in length from nine inches to two in accordance with the nature of the food. The enlargement at the bottom of the tube of the trachea in the males of the Ducks of the first division was pointed out as entirely composed of bone, while in those of the second division it was principally membranous. The series of trachea employed in illustration of these facts comprehended the whole of the species known to inhabit Britain. From an equally extensive series of sterna the depth of the keel was shown to be equal throughout all the Birds of the first division in proportion to the size of the sternum; while in those of the second division it diminished gradually as the power of diving increased, and exhibited a considerable approxi-

mation in form to the breast-bones of the Mergansers next in succession. The increase in the length of the ribs and the gradual approach by the Ducks and Mergansers to the form of the more perfect salt-water Divers, included in the genera *Colymbus*, *Uria*, and *Alca*, was pointed out by a comparison with a skeleton of one species of each genus, the elongation of the sternum and ribs forming at length a complete defence to the abdomen and flanks, by which the birds are enabled to resist pressure when diving. Several other collateral relations of minor importance were also noticed. In conclusion it was remarked that the external characters were also sufficiently marked to furnish a ready distinction between the divisions, the Ducks referrible to the first being characterized by length of neck, wings, and tarsi, and by their hind toe being free or without pendent lobe; while in those of the second the neck, wings, and tarsi are shorter, the latter compressed, and the hind toe lobated.

February 13.—The reading of the paper entitled *Remarks on the Comparative Anatomy of certain Birds of Cuba, with a view to their respective places in the System of Nature, or to their Relations with other animals*; by W. S. Mac Leay, Esq., was continued.

February 27.—Mr. Yarrell exhibited specimens of several female Pheasants in which the plumage had undergone a change so considerable as to present a striking resemblance to that of the male. In explanation of the causes of this change, and of analogous alterations in the plumage of other birds, he entered into a series of remarks, which were subsequently embodied into a paper read before the Royal Society, and printed in the Philosophical Transactions. An abstract of this paper has already been given at p. 291 of our present volume.

March 13.—Mr. Bell exhibited numerous specimens and drawings of the *Testudinata*, Klein, for the purpose of illustrating the natural affinities and distribution of this order of *Reptilia*. He pointed out five principal forms which he regarded as types of so many families, the *Testudinidæ*, *Emydidæ*, *Trionychidæ*, *Spharigidæ*, and *Cheloniadæ*, and dwelt at some length on the characters by which each is distinguished from the others, and also on those

possessed by each in common with the families most nearly connected with it. The circular succession of affinities among them he had hitherto been unable to trace with precision; although he had ascertained the existence of osculant species or genera between some of the families. The genus *Terrapene*, Merrem, or rather the sub-family *Sternothærina*, Bell, appeared to be intermediate between the *Testudinidæ* and *Emydidæ*, exhibiting the gibbous form of the land tortoises, but approximating to the fresh-water ones by its shorter sterno-costal suture and by its more palmate feet. In like manner the *Emydidæ* are connected with the *Trionychidæ* by means of the Matamata, *Chelys fimbriata*, Dum., in which not only does the sternum become shorter than in the more prominent types of the former family, but the beak also ceases to be horny, and is replaced by the soft projecting snout of the genus *Trionyx*. Between the remaining families he was yet unable to point out the connecting links. In the course of his observations he adverted to the importance of some characters hitherto little attended to in the discrimination of species, and particularly to that furnished by the area, or scabrous central portion, of each plate. This is always fully developed when the young tortoise quits the egg, and never increases in size, the subsequent growth of the plate being produced by additional lateral layers. Hence it furnishes a constant clue to the determination of the age of the individual. In the *Testudo elegans*, Schæpff, the area is large with scarcely any lateral striæ. This species is consequently founded on a very young shell, and an examination of the area in shells of various sizes shows it to be the young of *T. radiata*. Other instances were also adduced in confirmation of the remark; and the same character was shown to be essential in distinguishing species when the shells had attained their full growth. In *T. geometrica* for instance, the very small area affords almost the only point of discrimination between it and the closely allied species, *T. actinodes*, in which the area is considerably larger. Mr. Bell further adverted to a novel kind of Box-tortoise, in which the moveable portion of the shell forming the box existed in the costal plates instead of in the sternal as in *Terrapene*. The Land-Tortoises exhibiting this striking peculiarity he had recently de-

scribed under the generic name of *Kinyxis*, to which two species were already referrible. A discussion subsequently ensued on the subject of the circular succession of affinities and on analogies, in which Mr. Vigors and Dr. Horsfield took part.

· *March 27.*—Mr. Yarrell exhibited a specimen of the *Anus rufina*, Pallas, from the neighbourhood of Yarmouth. The occurrence of this second British specimen confirms the opinion advanced by Mr. Vigors at the meeting on January 29, 1826, that the species is entitled like other occasional visitors of these islands to a place in our Fauna. Mr. Yarrell also exhibited a specimen of a hybrid Bird between the Pheasant and the dark Dorking variety of the common Fowl.

· Mr. Vigors entered into some general observations on the geographical distribution of Birds, especially with reference to the forms met with in New Holland. He proposed to continue the subject at future meetings.

*April 10.*—A Paper *On the Orang-Otang of Borneo*: by John Harwood, M.D., F.L.S., &c. was read. Some observations on the same subject were made by Mr. Brookes, in the course of which he explained the principal differences between the skeletons of the Chimpanzee and the *Simia Satyrus*, L.

At the request of the Chairman, Mr. Gray adverted to the character assigned by M. G. Cuvier to the genus *Basiliscus*, Laur. He remarked that the description of the teeth appeared to have been taken from the *Lacerta Amboinensis*, L. On examining the specimens preserved in the British Museum, the teeth of this species were found to agree with those of the *Iguanidæ*; the teeth of the *Basiliscus Americanus*, Laur., on the contrary, correspond precisely with those of the *Agamidæ*. The two species were consequently referrible to distinct genera. To designate the former, he proposed to retain the generic name of *Basiliscus*, while to the latter the name of *Lophura* would be given in a paper on the above-mentioned families, which he was preparing to lay before the Club.

· Mr. Westwood exhibited living specimens of the *Aphanisticus emarginatus*, Lat., a rare British Insect, and of the larva of a species of *Cicindela*, L., both recently taken by him, the latter

having been dug from the bottom of the hole which it had formed for itself to the depth of 18 inches.

April 24.—Mr. Bell exhibited a specimen of a Viper, which in the act of swallowing a Mouse had ruptured the œsophagus and its coverings. Portions of the fur of the Mouse were seen protruding through the openings in the neck of the skin of the Viper in three places.

At the request of the Chairman, Mr. Gray exhibited a sketch of the foot of the Dodo, *Didus ineptus*, L., preserved in the British Museum, and another sketch of that contained in the Ashmolean Museum at Oxford, and also of the head remaining in the latter collection. He remarked that the feet agreed so perfectly in characters as to leave no doubt of their having belonged to the same species, but that although they were of opposite sides, the one being left and the other right, they must have been obtained from different individuals, the Oxford specimen being one inch shorter than that of the British Museum.

Mr. Yarrell exhibited, at the request and from the collection of Dr. Thackeray, F.L.S. Provost of King's College, Cambridge, a specimen of a small Gallinule, which corresponded precisely with the description of the female of the *Poule d'eau Poussin* of M. Temminck's Manuel, the *Gallinula pusilla*, Bechst., and the *Zapornia pusilla*, Leach. This bird, also a female, was caught alive in March last at Barnwell, near Cambridge. At a meeting of the Club in April, 1825, Dr. Thackeray had exhibited a specimen of the *Gallinula Baillonii*, caught alive at Melbourne, near Cambridge. Other examples of both these species were furnished by members of the Club for comparison, forming an interesting group of these very rare British Gallinules.

A portion of *An attempt at the Revision of the Genera of Saurian Reptiles*; by J. E. Gray, Esq., F.G.S., was read.

A Paper was also read, entitled, *General Observations on British Birds of Prey*; by W. Yarrell, Esq. F.L.S. The authour subsequently illustrated its subject by reference to numerous preparations which he exhibited to the meeting.

May 22.—Mr. Audubon exhibited numerous highly finished drawings, prepared by him for his forthcoming work on the Orni-

thology of North America, illustrating them by occasional observations on the œconomy and distribution of the Birds figured.

The reading of the *Attempt at the Revision of the Genera of Saurian Reptiles*: by J. E. Gray, Esq., F.G.S., was continued.

June 12.—Specimens of the *Loxia punctularia*, L., of the *L. crassirostris*, Gm., and of the *Fringilla Noctis*, L., from the Newcastle Museum, were exhibited, and some observations on them were made by Mr. Vigors.—The same gentleman subsequently entered into some general remarks on the Geographical Distribution of Birds, especially with respect to the groups observed in New Holland. Some observations in illustration of the same subject were afterwards made by Dr. Horsfield.

November 13.—Numerous specimens of *Mammalia* and Birds were exhibited, being a collection formed by Captain P. P. King, R.N., F.L.S., during the Survey of the Straights of Magellan, in which he is now engaged. Mr. Vigors remarked upon each species as he presented it to the notice of the meeting, dwelling particularly on those that appeared to be new, and pointing out several new forms which occurred.

November 29.—At the Anniversary Meeting held this day, the following members were elected as Officers and Committee for the ensuing year: J. Brookes, Esq., F.R.S., &c., *Chairman*; J. F. Stephens, Esq., *Treasurer*; E. T. Bennett, Esq., *Secretary*; J. G. Children, Esq.; A. H. Haworth, Esq.; J. Morgan, Esq.; R. Taylor, Esq.; N. A. Vigors, Esq.; W. Yarrell, Esq.

During the continuance of the ballot, the Chairman, J. G. Children, Esq., delivered an Address on the progress of Zoological Science in the course of the last year, which was ordered to be printed for distribution among the Members of the Linnean Society.

December 11.—The Rev. F. W. Hope exhibited a collection of indigenous Insects, recently formed by him in Shropshire, and some remarks relative to them were made by him and by Mr. Vigors. Among other observations, Mr. Hope mentioned that the larger specimens of the *Ripiphorus paradoxus*, which are much more rare than the smaller ones, are uniformly found only in the cells of the female Wasps.



Mr. Leadbeater exhibited specimens of twelve new species of Birds from the interior of South America, and from the Friendly Islands, of which he proposed shortly to lay descriptions before the Linnean Society. The distinguishing characters of each were explained by Mr. Vigors.

GEOLOGICAL SOCIETY.

November 2, 1827.—The Society having assembled this evening for the session:—

An extract was read, of *A letter from Captain P. P. King, R.N., to Dr. Fitton, P.G.S., dated at Rio de Janeiro, 10th June, 1827:—with some observations on the specimens sent home by Captain King; by the President.*

The reading was begun of a paper, *On the Geology of Tor and Babbacombe Bays, Devon; by H. T. De la Beche, Esq., F.R.S. &c.*

Nov. 16.—The reading of Mr. De la Beche's paper, begun at the last meeting, was concluded.

In his account of the carboniferous limestone, the authour gives a general list of the organic remains in this deposit: including *Trilobites, Encrinites, Corals, Nautili, Orthocerae*, and several species of testaceous *Mollusca*, characteristic of the carboniferous limestone. A very singular fossil also is figured, which appears to have been attached in the manner of the *Alcyonia*; but whether it is to be classed with the *Corals*, or considered as intermediate between the *Crinöidea* and *Echinodermata*, has not yet been determined. The cavern, called Kent's Hole, near Torquay on the N.E., lately celebrated from its containing the remains of various antediluvian animals, is in this carboniferous limestone. At Westerland, there is a schistose and micaceous variety of grauwacke, containing stems of *Encrinites, Corals*, and *bivalve shells*.

A paper was read, entitled *Supplementary Remarks on the Strata of the Oolitic series, and the Rocks associated with them,*

in *Sutherland, Ross, and the Hebrides*; by Roderick Impey Murchison, Esq., Sec. G.S., F.R.S., &c.

A letter was read from G. W. Featherstonhaugh, Esq., to W. H. Fitton, M.D., P.G.S., &c.; containing an account of an excavation in the chalk at Norwich.

Dec. 7.—A paper was read, *On the Geology of Quebec and its Vicinity*, by J. T. Bigsby, M.D., &c. &c.

The author describes the district in the neighbourhood of Quebec, and the rivers that traverse it. He notices the existence of occasional deposits of clay, gravel, and sand, including organic remains, which he supposes to be of diluvial origin; and then passes to the description of the rocks, commencing with a slaty series, alternating with calcareous conglomerate in beds, some of which are charged with fossils. On the south side of the river St. Lawrence, the slaty limestone of Quebec is no longer seen; but several new beds of conglomerate present themselves, one of the lowest of which contains *Trilobites*, *Encrinites*, *Corallines*, and other fossils, associated with vegetable impressions, probably of *Fuci* and *Amansia*. In the horizontal conchiferous limestone, the organic remains consist of several species of *Trilobite*, *Orthocera*, *Terebratula*, *Encrinite*, *Ammonite*, &c. Similar organic remains are found at Beaufort quarries, in ledges of fetid limestone alternating with calcareo-bituminous shale.

Dec. 21.—The reading was begun of a paper, *On a Group of Slate-Rocks in Yorkshire, between the Rivers Lune and Wharfe, from near Kirby Lonsdale to near Malham*; by John Phillips, Esq.

Jan. 4, 1828.—The reading of Mr. Phillips's paper, begun at the last meeting, was concluded.

To this paper, a sketch is premised of the slate-series of the Lakes of Westmoreland and Cumberland; where the rocks are grouped in three principal divisions, the lowest consisting of dark soft slate much contorted, with fine-grained gneiss beneath it passing into granite. The second division occupies a country of very different aspect from that of the slate: the mountain-ranges being marked by abrupt precipices, as at Helvellyn,

Langdale-Pikes, and the Lakes of Ulswater, &c., and consisting of brecciated argillaceous rocks containing calcareous spar, green-earth, and calcedony, with greenstone and other forms of trap. On the south of this chain is a tract of transition limestone, containing *Caryophyllia*, *Productæ*, *Spirifera*, and other fossils; and this is covered by a third zone of slate, the most recent rock of the country, usually divisible into rhomboidal blocks, of which two principal varieties are observable, alternating with each other; the one homogeneous and fissile, and containing organic remains, sparingly distributed, of the genera *Trigonia*, *Pecten*, *Gryphea*, *Turritella*, and *Terebratula*;—the other more granular and micaceous. This formation is in some cases succeeded by red conglomerate, but more commonly by mountain-limestone, the lowest beds of which contain numerous pebbles of slate and quartz; and above the limestone are the carboniferous rocks, including the millstone grit and the upper coal-measures. The highest strata known in the country, consist of the new red sandstone, placed in an unconformable position above the coal formation.

Jan. 18.—A notice was read *On the Occurrence of 'Chlorophæite' in Basaltic Dikes, in Northumberland; and of Carbonate of Strontian in the Lead Measures at Fallowfield, near Hexham;* by William Hutton, Esq. of Newcastle-upon-Tyne.

The reading was begun of a paper, *On the Geological Relations of the Secondary Strata in the Isle of Arran;* by the Rev. A. Sedgwick, V.P.G.S., F.R.S., and Roderick Impey Murchison, Esq., Sec. G.S., F.R.S., &c.

Feb. 1.—The reading of Professor Sedgwick and Mr. Murchison's paper, begun at the last meeting, was concluded.

Feb. 15.—The Anniversary Meeting of the Society was held, and the following Fellows were elected Officers and Council for the year ensuing:—*President*: William Henry Fitton, M.D.—*Vice-Presidents*: Arthur Aikin, Esq., F.L.S.; Rev. W. Buckland, D.D., F.R.S., Professor of Mineralogy and Geology in the University of Oxford; Charles Lyell, Esq., F.R.S. and L.S.; Rev. A. Sedgwick, F.R.S., Woodwardian Prof. Camb.—*Secretaries*: W. J. Broderip, Esq., F.R.S. & L.S.; R. J.

Murchison, Esq., F.R.S. & L.S.—*Foreign Secretary*: Henry Heuland, Esq.—*Treasurer*: John Taylor, Esq., F.R.S.—*Council*; J. E. Bicheno, Esq., Sec. L.S.; John Bostock, M.D., F.R.S.; Rev. W. D. Conybeare, F.R.S.; John Crawford, Esq., F.R.S.; Michael Faraday, Esq., F.R.S.; Davies Gilbert, Esq. M.P., Pres. R.S.; G. B. Greenough, Esq., F.R.S.; J. F. W. Herschel, Esq., Sec. R.S.; Leonard Horner, Esq., F.R.S.; Ashhurst Majendie, Esq., F.R.S.; Rev. J. H. Randolph; N. A. Vigors, Esq., F.R.S.; Sir R. R. Vyvyan, Bart., M.P.; Henry Warburton, Esq., M.P., F.R.S.

---

ZOOLOGICAL SOCIETY.

WE have again to report the steady advancement of this Society towards the full attainment of the objects for which it was instituted. Both the Menagerie and the Museum continue to receive almost daily important additions from the liberality of its friends and supporters. Among these we may mention a collection of skins of *Mammalia* and *Birds* from Singapore, presented by H. T. Colebrooke, Esq.; another assemblage of *Mammalia*, *Reptiles*, and *Fishes*, from New Holland and Madagascar, presented by C. Telfair, Esq.; a collection formed in Mexico by Capt. Lyon; and another, containing much of the zoological produce of the late overland expedition to the Arctic Regions, under the command of Capt. Franklin, presented by Dr. Richardson. Among the individual specimens, we will only mention the gift by Capt. Percy, of that curious animal, the *Chlamyphorus truncatus*, which was previously unknown to European naturalists, and whose singular osteology has been illustrated by Mr. Yarrell in a preceding page.

The buildings at the Society's gardens are proceeding rapidly.

The number of Members already admitted, amounts to very nearly eight hundred.

## INDEX TO VOL. III.



\* \* \* The new species described in this Volume, together with the species newly characterized, are distinguished by the *Italic* character.



	Page		Page
<i>Acanthurus</i> , a new genus of Petalocerous Coleoptera.....	155	<i>Ancylus</i> .....	535
<i>Accipiter fringilloides</i> .....	434	<i>irroratus</i> .....	536
<i>Achatina</i> .....	530	<i>radiatus</i> .....	ibid
<i>undulata</i> .....	531	Anisonyx cinerea, the type of the genus Arachnimorpha.....	158
<i>Adelium Hopii</i> .....	525	Annelida, observations on some species of the; by William Clark, Esq. ....	337
<i>Agama armata</i> .....	216	<i>Anolius rhodolæmus</i> .....	235
<i>cornuta</i> .....	263	Anopheles maculipennis, Meig. .	501
<i>Indica</i> .....	217	<i>bifurcatus</i> .....	ibid
<i>minor</i> .....	218	<i>grisescens</i> .....	503
<i>superciliosa</i> .....	216	<i>plumbeus</i> .....	501, 503
<i>tuberculata</i> .....	218	Antennæ, use of .....	129
<i>vultuosa</i> , Harlan .....	217, 263	Antennarius; two new species of, described .....	373
<i>Aglaia</i> , a genus of Insectorial Birds .....	347	<i>nitidus</i> .....	375
<i>Ailurus fulgens</i> .....	276	<i>unicornis</i> .....	374
<i>Alauda</i> , a genus of Insectorial Birds .....	343	<i>Antilope Addax</i> .....	590
<i>arvensis</i> , L. type of the genus	344	Chickara .....	581
Alcedo Alcyon, L. ....	439	<i>suturosa</i> .....	251
<i>Alcis</i> , a new genus of Lepidopterous Insects .....	286	<i>Apoda</i> , a sub-order of Snakes ...	253
Aleochara, on the position of the genus .....	63	Arachnimorpha, a genus of Petalocerous Coleoptera .....	158
<i>fuscipes</i> ♀, its larva ..	60, 508	Aramus scolopaceus, Vieill. ....	447
<i>Amadina</i> , a genus of Insectorial Birds .....	349	<i>Arctomys lateralis</i> .....	519
<i>Ammodramus</i> , a genus of Insectorial Birds .....	348	<i>pruinosa</i> .....	518
<i>Amphisbæna punctata</i> .....	235	Ardea alba, L. ....	447
<i>Ampullaria</i> .....	537, 538	<i>cærulea</i> , L. ....	ibid
<i>dubia</i> .....	539	<i>exilis</i> , Gmel. ....	446
<i>Anas atrata</i> , its trachea described	582	<i>melanocephala</i> .....	454
Gambensis, L. ....	495	<i>minuta</i> , L. ....	88
Nyroca .....	496	<i>tigrina</i> , Lath., type of the genus Tigrisoma .....	362
<i>rufina</i> .....	604	<i>virescens</i> , L. ....	447
<i>rutila</i> , Pall. ....	490	<i>Arvicola borealis</i> .....	517
<i>semipalmata</i> , its trachea described... ..	582	<i>helvolus</i> .....	517
Sponsa, L. ....	448	<i>riparius</i> .....	260
		<i>Asthenurus</i> , a genus of Insectorial Birds .....	353

	Page		Page
<i>Astur leucorrhous</i> .....	271	Bicheno, J. E. Esq. Notice of his Paper on Methods and Systems in Natural History .....	294, 578
Audubon, J. J. Notice of his Birds of America .....	469	Bigsby, Dr., Notice of his Description of a new species of <i>Trilobite</i> .....	266
<i>Aulacodus</i> , a new genus of Rodentia .....	463	Birds; in what respects their skeletons principally differ from those of the Mammalia .....	182
<i>Swinderianus</i> .....	ibid	of Prey, British; some observations on the Anatomy of; by William Yarrell, Esq. ....	181
<i>Balanus punctatus</i> , Mont. ....	76	Notice of the appearance of some rare, in England; by George Townshend Fox, Esq. ....	491
Bears, fossil bones of; notice of the discovery of .....	305	on the occurrence of some rare British; by Wm. Yarrell, Esq. ....	85, 497
Beaver of Europe distinct from the Canadian .....	142	Australian, in the Collection of the Linnean Society .....	276
BELL, THOMAS, Esq., Descriptions of a new species of <i>Anolis</i> , and a new species of <i>Amphisbæna</i> ; collected by W. S. MACLEAY, Esq. in the Island of Cuba .....	235	on some species from Cuba of North America, described by the PRINCE OF MUSIGNANO. ....	49
Descriptions of three new species of Land Tortoises .....	419	Blackwall, John, Esq., Analysis of his observations and experiments on the means by which the Spiders that produce Gossamer effect their aerial excursions .....	296
On Hydraspis, a new genus of Freshwater Tortoises, of the family Emydidæ ....	511	<i>Bledius Stephensii</i> .....	61, 301, 509
Characters of the order, families, and genera of the Testudinata .....	513	<i>Skrimshirii</i> .....	510
Analysis of his Paper on the structure and use of the submaxillary odoriferous gland of the Crocodile .....	290	Boa, anatomy of its inferior extremity .....	253
Notice of his Paper on two new genera of Land Tortoises ....	295	Bojan, Dr. L., analysis of his notes on the dentition of the Horse and Sheep .....	251
Analysis of the same .	583	<i>Bombycilla garrula</i> , Vieill. ....	51
BENNETT, E. T. Esq., Observations on the Fishes contained in the Collection of the Zoological Society .....	371	<i>Bombyx Brahma</i> .....	208
Description of a new species of <i>Julis</i> . ....	577	<i>Buddha</i> .....	209
Analysis of his Notice on a peculiar property of a species of <i>Echinus</i> . ....	280	<i>Ganesa</i> .....	211
BERKELEY, Rev. M. J., A short account of a new species of <i>Modiola</i> , and of the animal inhabitants of two British Serpulae .....	229	<i>Siva</i> . ....	210
Bevan, E., M.D., Notice of his Honey-Bee; its Natural History, &c. ....	474	BONAPARTE, CHARLES LUCIAN. See MUSIGNANO, PRINCE OF.	
		Bos Gour of India, Major-General T. Hardwicke on the. ....	231
		Brachelytra, on certain portions of the; by Mr. J. O. Westwood .	56
		number of eyes in their larva. ....	506
		<i>Brachonyx</i> , a genus of Insectivorous Birds .....	345
		<i>Brachypus</i> , a genus of Insectivorous Birds .....	163

Page	Page
<b>BRAYLEY, E. W. Jun.</b> Some Account of the Life and Writings, &c. of the late Sir Thomas Stamford Raffles.....1,	352
<b>BRODERIP, W. J. Esq.,</b> Description of some new and rare Shells.....	81
Description of a Fossil Volute from St. Peter's Mountain, near Maestricht .....	234
Observations on the Jaw of a Fossil Mammiferous Animal, found in the Stonesfield Slate ..	408
Note on Caryophyllia	485
<b>Bullæa</b> , observations on the Animals of some species of; by William Clark, Esq.....	337
<b>Bullæa Catena</b> .....	337
<i>pruinosa</i> .....	339
<i>punctata</i> .....	ibid
<b>Bunting, Green-headed</b> .....	498
<b>Buteo polyosoma</b> .....	271
<b>Buzzard, Rough-legged</b> .....	491
<b>Cæcilia</b> , remarks on its characters	254
<b>Callionymus Dracuncululus</b> , not the female of <i>C. Lyra</i> .....	336
<b>Camelopardalis Giraffa</b> , peculiarities of its tongue .....	596
<b>Camera lucida</b> , advantages of the	404
<b>Campicola</b> , a genus of Insectorial Birds .....	171
<b>Campontia</b> , a new genus of Apodous Annelides .....	325
<i>cruciformis</i> .....	ibid
<b>Campulipus</b> , a new genus of Petalocerous Coleoptera .....	154
<b>Campylopterus</b> , a genus of Insectorial Birds .....	358
<b>Canis cæruleo-argentatus</b> , Erxl..	423
<b>Cardita concamerata</b> , note on its anomalous structure, by G. B. SOWERBY .....	526
<b>Caribæan Islands</b> , continuation of Observations on the Zoology of the; by the Rev. LANSDOWN GUILDING .....	403, 527
<b>Caryophyllia</b> , Mr. De la Beche on the habits of .....	481
<b>Caryophyllia</b> , amended character of .....	486
<b>Caryophyllia Smithii</b> .....	486
<b>Cassiculus</b> , a genus of Insectorial Birds .....	352
<i>coronatus</i> , type of the genus	353
<b>Cassicus melanicterus</b> .....	261
<b>Cathartes Californianus</b> .....	49
<b>Catophragmus</b> , a new genus of Cirripedes .....	134
<b>Cemoria Flemingii</b> , Leach, forms the type of the genus <i>Puncturella</i> .....	77
Montagui, the young of <i>Fissurella Græca</i> .....	77
<b>Ceratodes</b> , a new genus of Shells	537, 540
<i>fasciatus</i> .....	541
<b>Cercopithecus? leucopyrminus</b> ..	249
anatomy of its stomach..	251
<b>Certhia maculata</b> , Wils. type of the genus <i>Oxyglossus</i> .....	357
<b>Certhilauda</b> , a genus of Insectorial Birds .....	344
<b>Chæmepelia</b> , a genus of Insectorial Birds .....	361
<b>Chætura</b> , a genus of Hirundinidæ	407
<b>Chamæleo vulgaris</b> , Latr. ....	220
<b>Charadrius Cantianus</b> , Lath. ..86,	301
vociferus, L. ....	448
<b>Charissa</b> , a new genus of Lepidopterous Insects .....	286
<b>Cheiromeles torquatus</b> , Horsf. ...	460
<b>Cheiroptera</b> ; variations in their dentary system .....	459
<b>Chelonia</b> .....	516
<b>Cheloniadæ</b> .....	516
<b>Chelonura</b> .....	515
<b>Chelys</b> .....	515
<b>CHILDREN, J. G. Esq.,</b> On the Esquimaux Dog .....	54
<b>Chironectes lævigatus</b> , Cuv. how distinguished from <i>Antennarius nitidus</i> .....	377
<i>tuberosus</i> , Cuv. how distinguished from <i>Antennarius unicornis</i> ..	375
<b>Chitons</b> , Descriptions of several new species of, found on the Coast of Chili in 1825; with a few remarks on the method of taking and preserving them; by JOHN FREMBLY, R.N. ....	193
<b>Chiton aculeatus</b> , Barnes .....	196
<i>aselloides</i> , Lowe, (Ch. albus, Mont.) .....	80
<i>asellus</i> , Chemn., (Ch. cinereus, Mont.) .....	80
<i>Chilensis</i> .....	204
<i>cinereus</i> , L. (Ch. marginatus, Mont.) .....	80
<i>Coquimbensis</i> .....	197
<i>Cumingii</i> .....	198
<i>disjunctus</i> .....	203
<i>elegans</i> .....	ibid
<i>glaucocinctus</i> .....	201

	Page		Page
<i>Chiton granosus</i> .....	200	<i>Columba inornata</i> .....	446
<i>granulosus</i> .....	201	<i>leucocephala</i> , L. ....	ibid
<i>latus</i> .....	199	<i>Macquarrie</i> .....	273
<i>lineolatus</i> .....	204	<i>migratoria</i> , L. type of	
<i>olivaceus</i> .....	199	the genus <i>Ectopistes</i> .	362
<i>Peruvianus</i> .....	202	<i>Pampusan</i> .....	273
<i>spiniferus</i> .....	196	<i>passerina</i> , Temm. } types	
<i>tuberculiferus</i> , Sowerby..	196	<i>squamosa</i> , Temm. } of	
<i>Chlamydosaurus Kingii</i> .....	137	the genus <i>Chæmepelia</i>	361
<i>Chlamyphorus truncatus</i> , its Os-		<i>Pinon</i> .....	273
teology, Report on, by Mr.		<i>Zenaida</i> .....	53
YARRELL .....	544	<i>Condylura</i> .....	587
<i>Chondropoda</i> , a sub-order of		<i>Corvus Columbianus</i> .....	49
Snakes .....	253	<i>Jamaicensis</i> ? Gmel. ....	443
<i>Chrysinia</i> , a new genus of Petalo-		<i>Stelleri</i> , Gm. ....	50
cerous Coleoptera .....	522	<i>Coulson</i> , W. Notice of his Trans-	
<i>Chrysinia Peruviana</i> .....	523	lation of Blumenbach's Manual	
<i>Ciconia Argala</i> , Correction of M.		of Comparative Anatomy.....	478
Temminck's improper applica-		<i>Cremastocheilus</i> , Knoch.....	150
tion of this name to the <i>C.</i>		<i>canaliculatus</i> .....	151
<i>Marabou</i> .....	454	<i>Castaneæ</i> .....	152
<i>Cinclus</i> , Bechst. ....	51	<i>Harrisii</i> .....	152
<i>Pallasii</i> , Temm. ....	52, 53	<i>Cricetus talpoides</i> .....	518
<i>aquaticus</i> , Bechst.....	53	<i>Crithagra</i> , a genus of Insectorial	
<i>Circus histrionicus</i> .....	271, 425	Birds .....	348
<i>Clark</i> , B., analysis of his Remarks		<i>Crocodyle</i> ; on the structure and	
on the Insect called <i>Oistros</i> by		use of its submaxillary odori-	
the ancients .....	584	ferous gland .....	290
<i>CLARK</i> , WILLIAM, Esq., Observa-		<i>Crocodylus porosus</i> , Schneid. ...	214
tions on the Animals of some		<i>Niloticus</i> , Daud. ....	ibid
species of <i>Bullæa</i> , Lam.; and on		<i>Crotophaga Ani</i> , L. ....	445
some species of the <i>Annelida</i> ..	337	<i>Crustacea</i> , spurious legs of; their	
<i>Cleora</i> , a new genus of Lepidop-		use .....	406
terous Insects .....	139	<i>Cryptopoda</i> , a sub-order of Snakes	253
<i>Cnemida</i> , a new genus of Petalo-		<i>Cuba</i> , on some species of Birds	
cerous Coleoptera .....	146	from .....	432
<i>Curtisii</i> .....	148	<i>Culicivora</i> , a genus of Insectorial	
<i>Francilloni</i> .....	147	Birds .....	359
<i>Sparshalli</i> .....	148	<i>Cursorius isabellinus</i> .....	492
<i>Cnephasia</i> , a new genus of Lepi-		<i>CURTIS</i> , JOHN, Esq. An account	
dopterous Insects.....	286	of <i>Elater Noctilucis</i> , the Fire-	
<i>Coates</i> , Dr. R., analysis of his		fly of the West Indies.....	379
remarks on <i>Janthina</i> .....	264	analysis of his British	
<i>Cobitis anableps</i> , peculiarities in		Entomology. Nos.	
the anatomy of its eye.....	596	xxv—xxxvi .....	285
<i>Colaptes</i> , a genus of Insectorial		<i>Cuterebra fontinella</i> .....	586
Birds .....	353	<i>Cyclorhis</i> , a genus of Insectorial	
<i>Fernandina</i> .....	445	Birds .....	162
<i>superciliaris</i> .....	ibid	<i>Cymba</i> , a new genus of <i>Volutidæ</i> . 133	
<i>Coleoptera</i> , Petalocerous, Des-		<i>Cymophorus</i> , a new genus of Peta-	
cription of some new Genera		locerous Coleoptera.....	153
and Species of; by the Rev.		<i>undatus</i> .....	ibid
W. KIRBY.....	145	<i>Cynanthus</i> , a genus of Insectorial	
<i>Coleopterous Insects</i> furnished		Birds .....	357
with ocelli.....	66	<i>Cypræa albella</i> .....	572
<i>Coluber fulvius</i> , var. ....	588	<i>aperta</i> .....	571
<i>Lichtensteintii</i> .....	255	<i>Australis</i> .....	570
<i>Columba cinerea</i> , Temm. type of		<i>Avellana</i> .....	568
the genus <i>Peristera</i> .....	360	<i>Barcinensis</i> .....	575



	Page		Page
<i>Cypræa Californiana</i> .....	365	DILLWYN, L. W. Esq. Remarks	
<i>Capensis</i> .....	573	on <i>Cyprææ</i> described by Mr.	
<i>carnea</i> .....	569	Gray .....	315
<i>coccinelloides</i> .....	567	Dinops Cestoni, Savi, suspected	
<i>dactylosa</i> .....	574	by M. Temminck to be a species	
<i>elegans</i> .....	575	of <i>Dysopes</i> .....	463
<i>Europæa</i> .....	366	<i>Discorbis vesicularis</i> , probably	
<i>lota</i> .....	572	annulose .....	341
<i>nivosa</i> .....	84	Dodo, a summary review of the	
<i>Oryza</i> .....	369	proofs of its former existence,	
<i>Pediculus</i> .....	370	by J. S. DUNCAN, Esq. ....	554
<i>pisolina</i> .....	567	difference between the spec-	
<i>Pulex</i> .....	368	imens of the feet. ....	605
<i>quadri-punctata</i> .....	368	Dog, Mr. Children on the Es-	
<i>radians</i> .....	364	quimaux .....	54
<i>retusa</i> .....	568	<i>Dolichonyx</i> , a genus of Insectorial	
<i>rugosa</i> .....	84, 575	Birds .....	351
<i>scabriuscula</i> .....	364	<i>Draco abbreviata</i> .....	219
<i>sphæriculata</i> .....	567	<i>quinque fasciata</i> .....	ibid
<i>subrostrata</i> .....	363	<i>viridis</i> , Daud. ....	ibid
<i>triticea</i> .....	570	<i>Drepanocerus</i> , a new genus of	
<i>Cyprææ</i> , Remarks on those de-		petalocerous Coleoptera .....	521
scribed by Mr. Gray; by L.W.		<i>Kirbtii</i> .....	521
DILLWYN, Esq. ....	315	<i>Drymoita</i> , a genus of Insectorial	
<i>Cypræidæ</i> , continuation of Mr.		Birds .....	168
Gray's Monograph on the. ....	363, 567	Duck, grey headed. ....	496
<i>Cyrtodactylus</i> , a new genus of		Kasarka .....	496
Saurian Reptiles .....	224	ferruginous .....	496
<i>pulchellus</i> .....	ibid	castaneous .....	496
<i>Dacelo Gaudichaud</i> .....	273	Ducks, some anatomical particu-	
<i>Dasyprocta Patachonica</i> , Ill. ....	423	lars of, 601,—grounds of an ar-	
<i>Dasypus minutus</i> , Desm. ....	423	rangement of the British spe-	
DE LA BECHE, H. T., Esq., his		cies of .....	601
Notes on the habits of a <i>Caryo-</i>		DUNCAN, J. S., Esq., A summary	
phyllia, from Tor Bay, Devon. ....	481	review of the authorities on	
<i>Delphinus albigena</i> .....	270	which naturalists are justified	
<i>cruciger</i> .....	271	in believing that the Dodo for-	
<i>Desmaresti</i> .....	592	merly existed .....	554
Rhinoceros .....	270	<i>Dyschirius æratus</i> .....	500, 502
<i>Dendrocolaptes</i> , Ill. a genus of In-		<i>Dysopes</i> , Analysis of M. Tem-	
sectorial Birds .....	354	minck's Monograph of the genus	459
<i>procurvus</i> , Temm.		<i>abrasus</i> .....	462
type of the genus		<i>Ægyptiacus</i> .....	461
<i>Xiphorhyncus</i> ..	354	<i>Alecto</i> .....	462
<i>sylviellus</i> , Temm.,		<i>Cheiropus</i> .....	460
type of the genus		<i>Geoffroyi</i> .....	461
<i>Sittasomus</i> ....	355	<i>nasutus</i> .....	462
<i>Dendroplex</i> , a genus of Insectorial		<i>obscurus</i> .....	ibid
Birds .....	354	<i>perotis</i> .....	461
<i>Dermestes Armadillus</i> , De Geer.		<i>plicatus</i> .....	ibid
501, 503		<i>rufus</i> .....	ibid
<i>Dianous cærulescens</i> .....	501	<i>Ruppelii</i> .....	ibid
<i>Didelphis Bucklandi</i> , an extinct		<i>tenuis</i> ..	ibid
fossil animal. ....	411	<i>velox</i> .....	462
<i>Didus ineptus</i> , proofs of its for-		Echidna <i>setosa</i> , structure of its	
mer existence .....	554	knee-joint .....	597

	Page		Page
<i>Echinus lividus?</i> Lam. Notice of a peculiar property possessed by it.....	280	<i>Fennecus Cerdo</i> ; Analysis of Messrs. Children and Vigors's description of.....	453
<i>Ectopistes</i> , a genus of Insectorial Birds.....	362	Fire-fly, an account of the.....	379
<i>Elater Noctilucus</i> , the Fire-fly of the West Indies, an account of; by John Curtis, Esq. ....	379	Fishes, fossil; notice of some....	304
Elephant, African, type of the new genus <i>Loxodonta</i> .....	141	new species of, described by C. A. le Sueur, 264, 588	588
notice of some fossil bones of the.....	307	contained in the Collection of the Zoological Society; by E. T. Bennett, Esq. ....	371
<i>Emberiza chlorocephala</i> .....	498	FITTON, W. H. M.D. On the Strata from whence the fossil Jaw found at Stonesfield was obtained.....	412
<i>Cirlus</i> , L.....	86	Flight in birds; conditions necessary to its full developement ..	182
<i>hortulana</i> .....	498	<i>Fluvicola</i> , a genus of Insectorial Birds.....	172
<i>melanodera</i> .....	272	<i>Formicaleo Leachii</i> .....	599
<i>oryzivora</i> , Wils. type of the genus <i>Dolichonyx</i> .....	352	<i>tarsalis</i> .....	ibid
<i>Emcephalus</i> , a new genus of heteromerous Coleoptera.....	524	FOX, GEORGE TOWNSHEND, Esq. Notice on the appearance of some rare Birds in England....	491
<i>Emcephalus gibbosus</i> .....	524	Notice of his Synopsis of the Newcastle Museum. ....	478
<i>Emydidæ</i> .....	514	<i>Francolinus Clappertoni</i> .....	453
<i>Emys</i> .....	515	Franklin, Capt., Quadrupeds collected by, their characters....	516
Esquimaux Dog, J. G. CHILDREN, Esq., on the.....	54	FREMBLY, JOHN, R.N. Description of several new species of Chitones found on the Coast of Chili in 1825; with a few remarks on the method of taking and preserving them.....	193
<i>Estrilda</i> , a genus of Insectorial Birds.....	349	Fringilla australis?.....	429
<i>Eublepharis</i> , a new genus of Saurian Reptiles.....	223	<i>caudacuta</i> , Wils., type of the genus <i>Ammodramus</i> .....	348
<i>Hardwickii</i> .....	ibid	<i>Cocothraustus</i> , Temm., type of the genus <i>Megalotis</i> .....	86
<i>Falco Braziliensis</i> , Lath.....	423, 434	<i>cruciger</i> } types of the genus <i>Megalotis</i> .....	347
<i>lagopus</i> , L.....	491	<i>ornata</i> , Temm., type of the genus <i>Tiaris</i> .....	351
<i>peregrinus</i> .....	425	<i>vespertina</i> .....	49
<i>Sparverioides</i> .....	436	<i>xanthoraa</i> .....	261
<i>Sparverius</i> , L.....	425, 435	<i>Galba</i> , a new genus of Annelides <i>marina</i> .....	321
Falcons; their power of flight, how produced and modified ..	182	its internal structure....	322
their powers of vision, how increased.....	185	<i>Gallinula Baillonii</i> , Vieill. ....	493
structure of their tracheæ and stomachs.....	186	<i>Foljambii</i> , Mont.....	494
form of their intestines, compared with those of Amphibious Mammalia.....	187	<i>Martinica</i> , L.....	448
Fauna, British, contributions to; by George Johnston, M.D....	175, 321, 486	<i>pusilla</i> , Temm. ....	494, 605
<i>Felis</i> , Descriptions of two species of, in the Collection of the Zoological Society; by N. A. Vigors, Esq. and Thos. Horsfield, M.D. ....	449	<i>Gallinule</i> , olivaceous.....	493
<i>Felis planiceps</i> .....	450	<i>Gammarus dubius</i> .....	178
<i>Temminckii</i> .....	451	<i>maculatus</i> .....	76
Fennec, observations on the Osteology of the.....	401		

	Page		Page
<i>Gammarus nolens</i> .....	179	<i>Haltica</i> .....	501, 503
<i>punctatus</i> .....	177, 490	HARDWICKE, Major-General T.,	
<i>Garrulus ultramarinus</i> .....	261	on the Bos Gour of India .....	231
<i>Gastropacha Vishnou</i> .....	207	and J. E. GRAY, Esq.;	
<i>Gavialis Gangeticus</i> , Geoffr. St.		Synopsis of the species	
Hil. ....	214	of Saurian Reptiles, col-	
<i>Geckô verus</i> , Merr. ....	223	lected in India by Major-	
Giraffe, peculiarities of its tongue	596	General Hardwicke. ....	213
Godart, J. B. Notice of his His-		Hardwicke, Major-General; analy-	
toire Naturelle des Lépidop-		ysis of his Description of a new	
tères de France .....	472	genus of the class Mammalia,	
Godman, Dr., analysis of his note		from the Himalaya chain of	
of <i>Condylura</i> .....	587	Hills, 275—Notice of his De-	
Goose, ruddy .....	496	scription of two new birds from	
spur-winged .....	495	Nepaul .....	278
GRAY, JOHN EDWARD, Esq.;		Harlan, Dr., analysis of his De-	
continuation of his Monograph		scription of a new species of	
on the <i>Cypræidæ</i> .....	363, 567	biped Seps, 262—of two new	
and Major-General HARD-		species of <i>Agama</i> , 263—of a	
wicke; Synopsis of the		new species of <i>Scincus</i> , 263—	
species of Saurian Rep-		of a variety of <i>Coluber fulvius</i> ,	
tiles, collected in India		&c. ....	588
by Major-General Hard-		<i>Harpadon</i> , a new sub-genus of	
wicke .....	213	<i>Salmo</i> .....	589
Green, Jacob; analysis of his de-		Harwood, Dr J., analysis of his	
scription of a new species of		account of a pair of hinder	
<i>Salamander</i> .....	588	hands of the Orang Otang. ....	579
Ground-Pearl, real nature of ...	600	<i>Helicina</i> .....	528
Grouse, Notice of a nondescript		<i>Occidentalis</i> .....	529
species of, from North Ame-		<i>variabilis</i> .....	529
rica; by Charles Lucian Bona-		<i>Helobia Gyllenhalii</i> , Gyll. ....	500
parte, Prince of Musignano ...	212	<i>Hemidactylus</i> .....	223
GUILDING, REV. LANSDOWN. Con-		<i>Hesperophilus</i> , a new sub-genus	
tinuation of his observations		of <i>Staphylinidæ</i> .....	510
on the Zoology of the Caribæan		Hills, Robert, Esq., analysis of	
Islands .....	403, 527	his Remarks on the Antelope	
analysis of his observations		<i>Chickara</i> .....	581
on the <i>Crepitaculum</i> , &c.		<i>Hinnites</i> , Observations on the ge-	
of some Orthopterous In-		nus, of M. DeFrance, together	
sects, 280,—of his Na-		with the characters of several	
tural History of Oike-		species; by Mr. G. B. SOWERBY	67
ticus, .....	583	<i>Hinnites Cortesyi</i> , DeFr. ....	70
<i>Guiraca</i> , a genus of Insectorial		<i>Dabuissoni</i> , DeFr. . . . .	ibid
Birds .....	350	<i>giganteus</i> , Gray . . . . .	ibid
Gyllenhal, L. Notice of his In-		<i>corallinus</i> .....	71
secta <i>Suecica</i> .....	473	<i>Pusio</i> .....	ibid
<i>Gymnura</i> , a new genus of Mam-		<i>Hirundo riparia</i> .....	427
malia .....	247	<i>rustica</i> .....	ibid
<i>Rafflesii</i> .....	247	<i>urbica</i> .....	ibid
<i>Hæmatopus niger</i> .....	274	Hister <i>cadaverinus</i> , Description of	
<i>picatus</i> .....	136	its larva .....	508
<i>Hallæctus erythronotus</i> .....	424	Hope, Rev. F. W., some coleop-	
HALIDAY, A. H. Esq. Notices		terous Insects in his collection	
of Insects taken in the North		described by the Rev. W. Kirby	520
of Ireland .....	500	Hoppe Dr. D.D., and Dr. Horns-	
Note on the foregoing Pa-		chuch, notice of their descrip-	
per; by J. F. STEPHENS,		tions of new species of European	
Esq. ....	502	Coleopterous insects .....	260
		Horse, notes on its dentition ...	252

Page	Page		
HORSFIELD, THOS. M.D. Notice of two species of Vespertilionidæ forwarded by W. S. Mac Leay, Esq. ....	236	Janthinæ, eggs of .....	265
Account of his contributions to the Transactions of the Batavian Society, 41,—of his researches in the Island of Banca, 45,—in Java, 47,—his botanical collections, 392,—his Zoological Researches, 392		floating apparatus of ..	264
Analysis of his Notice of a species of Ursus from Nepal .....	276	Java, Zoology of .....	35
HORSFIELD, THOMAS, M.D. and VIGORS, N. A. Esq. their Notice of a new genus of Mammalia found in Sumatra by Sir T. Stamford Raffles .....	246	Jaw of a Fossil Mammiferous Animal, Observations on the; by W. Broderip, Esq. ....	408
Description of two Species of the genus Felis, in the Collection of the Zoological Society ...	449	On the strata from whence it was obtained; by W. H. Fitton, M.D. ....	412
<i>Hyæna villosa</i> .....	580	Jennings, J. Notice of his Ornithologia .....	470
<i>Hydraspis</i> , a new genus of Fresh-water Tortoises, Mr. Bell on, 511,—its characters .....	513, 515	JOHNSTON, GEORGE M.D. Contributions to the British Fauna ..	175, 321, 486
<i>Hyliota</i> , a genus of Insectorial Birds .....	170	<i>Julis Argus</i> .....	577
<i>Hylobius Abietis</i> , Fab. ....	501	KING, CAPT. PHILIP PARKER, R.N.; Extracts from a Letter addressed to N. A. Vigors, Esq., on the Animals of the Straits of Magellan .....	422
<i>Hyrax arboreus</i> .....	580	Analysis of the Zoological appendix to his Survey of the Coasts of Australia. ....	135
Icterus Dominicensis .....	441	<i>Kinosternon</i> .....	515
<i>virescens</i> ? .....	ibid	<i>Kinyxis</i> , a new genus of Land Tortoises .....	515, 583
Insecta, how defined by Messrs. Kirby and Spence .....	125	<i>Kinyxis castanea</i> ..	ibid
Insects, account of the Royal Cabinet of, at Berlin .....	312	<i>Homeana</i> .....	ibid
Brasilian, notice of a century of .....	259	KIRBY, REV. W. A Description of some new Genera and Species of Petalocerous Coleoptera ....	145
European, notice of fourteen new species of. ...	250	A Description of some Coleopterous Insects in the Collection of the Rev. F. W. Hope ....	520
taken in the North of Ireland, Notice of; by A. H. Haliday, Esq. ....	500	Kirby and Spence's Introduction to Entomology, reviewed ....	124
their migrations .....	405	Klug, analysis of his Century of Coleopterous Insects from Brasil	259
dorsal vessel of, its connection with the ovaries	257	LACEPEDE, COUNT DE. Sketch of his Life and Character; by William Swainson, Esq. ....	73
existence of a ganglionic system in .....	258	<i>Lacuna</i> , Dr. TURTON on the genus	190
ovaries and eggs of .....	256	<i>canalis</i> .....	192
sense of smelling in, where situated .....	129	<i>crassior</i> .....	ibid
Coleopterous, described by the Rev. W. Kirby	520	<i>Montacuti</i> .....	191
Ireland, Insects taken in the North of .....	500	<i>pallidula</i> .....	190
		<i>Puteolus</i> .....	191
		<i>quadrifasciata</i> .....	ibid
		<i>vincta</i> .....	192
		<i>Lagomys Princeps</i> .....	520
		<i>Lampornis</i> , a genus of Insectorial Birds .....	358
		Lanius Capensis, Shaw, type of the genus Nilæus .....	162

	Page		Page
<i>Larus Georgii</i> .....	136	<i>Lygosoma</i> , a new genus of Saurian	
<i>minutus</i> .....	499	reptiles .....	228
LEFEBVRE, M. ALEX. Description		<i>serpens</i> .....	ibid
de cinq espèces de Lépidoptères			
Nocturnes, des Indes Orientales	205	<i>Macaria</i> , a new genus of Lepidop-	
<i>Leistes humeralis</i> .....	442	terous Insects .....	286
<i>Lemmus helvulus</i> .....	517	MAC LEAY, W. S. Esq. Birds	
Lépidoptères Nocturnes; descrip-		collected by him in the neigh-	
tion de cinq espèces de, des		bourhood of the Havana .....	432
Indes Orientales; par M. Alex.		Notice of his Observa-	
Lefebvre .....	205	tions on the structure	
<i>Leptophis punctulatus</i> .....	137	of the Tarsus in the	
<i>Lepus Princeps</i> .....	520	Tetramerous and Tri-	
Lesson, R. P. Notice of his Man-		merous Coleoptera of	
nuel de Mammalogie .....	464	the French Entomolo-	
<i>Lestris Pomarinus</i> .....	497	gists .....	279
Le Sueur, C. A. Notices of his		<i>Macronyx</i> , a genus of Insectorial	
Descriptions of Fishes .....	264	Birds .....	344
Notices of his Descrip-		<i>Malaconotus</i> , a genus of Insectorial	
tion of a new species		Birds .....	163
of Saurus, 588, — of		<i>Malurus texillis</i> .....	272
four new species of		Mammalia, notice of a new genus	
Murænothis, 588,—of		of ( <i>Gymnura</i> ,) .....	246
a new fish of the genus		Mantis <i>Ægyptiaca</i> , connection of	
<i>Salmo</i> , 589		the gall-bladder with the dorsal	
Lichtenstein, Professor, Analysis		vessel in .....	258
of his Memoir on the Antilopes		<i>Margarodes</i> , a new genus of Insects	600
of Northern Africa .....	590	Mayer, Professor, analysis of his	
<i>Lochmias</i> , a genus of Insectorial		paper on the hinder extremity	
Birds .....	355	in Snakes .....	253
<i>Locusta camellifolia</i> ; its organ of		Notice of his paper on	
sound .....	280	the Anatomy of <i>Rana</i>	
Lophius; Observations on the po-		<i>Pipa</i> .....	255
sition of that group of fishes... 372		<i>Megalotis</i> , a genus of Insectorial	
Lophophorus Wallichii .....	278	Birds .....	347
LOWE, Rev. R. T. On <i>Balanus</i>		<i>Megamerus</i> , a new genus of Cole-	
<i>punctatus</i> , <i>Puncturella Flemingii</i>		opterous Insects .....	138
&c.; together with some cor-		<i>Megapodius</i> , a new genus of Ra-	
rections relative to <i>Turbo car-</i>		sorial Birds .....	273
<i>neus</i> , and some of the Chitones		<i>Megapodius Freycinet</i> .....	274
before described .....	76	<i>La Perouse</i> .....	274
<i>Loxia astrild</i> , L. type of the genus		Meigen, J. W. Notice of his	
<i>Estrilda</i> .....	350	Systematische Beschreibung der	
<i>cærulea</i> , Wils. type of the		Europaischen Zweiflugeligen	
genus <i>Guiraca</i> .....	350	Insekten .....	473
<i>fasciata</i> , Gmel, type of the		<i>Mellisuga Kingii</i> .....	432
genus <i>Amadina</i> .....	349	<i>Melo</i> , a new genus of Volutidæ .. 133	
<i>sulphurata</i> { types of the }		<i>Melolontha limbata</i> , Oliv., type	
<i>flaviventris</i> { genus }	348	of the genus <i>Campulipus</i> .....	154
<i>Crithagra</i> }		<i>Milvago ochrocephala</i> , Spix ... 424	
<i>Loxodonta</i> , a new genus formed		<i>Milvulus</i> , a genus of Insectorial	
to receive the African Elephant	140	Birds .....	165
<i>Lumbricus lineatus</i> , Mull. .... 329		<i>Mimeta</i> , a new genus of Birds ... 136	
<i>littoralis</i> .....	328	<i>flavocincta</i> .....	136
<i>minutus</i> , Fabr .....	ibid	Modiola, a short account of a new	
<i>pellucidus</i> .....	327	species of; by the Rev. M. J.	
<i>rufescens</i> .....	ibid	Berkeley .....	229
<i>variegatus</i> , Mull. .... 326		<i>Modiola rhombea</i> .....	229

	Page		Page
MOLLUSCA CARIBÆANA .....	527	of his Notes to the Descriptions of ten species of South American Birds .....	587
Molossus, synonymous with Dysopes .....	459	<i>Myoxus Drummondii</i> .....	517
<i>velox</i> , Natterer .....	237	<i>Nautilus crispus</i> , Auct. an external shell .....	78
<i>Monasa fusca</i> .....	262	<i>rectus</i> , Mont. a variety of N. Legumen .....	342
Monitor elegans .....	225	<i>subarcuatus</i> , Mont. do. <i>ibid</i>	
<i>flavescens</i> .....	226	<i>Nilaus</i> , a genus of Insectorial Birds .....	162
Motacilla rubecula, L. type of the genus Saxicola .....	172	<i>Nengetus</i> , a genus of Insectorial Birds .....	166
Müller, Dr. J., analysis of his paper on the eggs and ovaries of Insects .....	256	<i>Numida cristata</i> , its trachea described .....	581
<i>Mus leucopus</i> .....	518	<i>Nycticorax violacea</i> .....	446
Muscicapæ psalura, Temm. ....	428	<i>Nyctinomus</i> , included in M. Temminck's genus <i>Dysopes</i> .....	459
<i>pullata</i> .....	262	<i>Nymphæum coccineum</i> .....	489
<i>ruticilla</i> , L. type of the genus <i>Sitophaga</i> .....	360	<i>Obrium</i> , a new genus of Coleopterous Insects .....	139
<i>stenura</i> , Temm. type of the genus <i>Culicivora</i> .....	359	Ocelli of Coleopterous Insects ...	66
<i>tanioptera</i> .....	262	<i>Oiketicus Kirbyi</i> .....	584
<i>violenta</i> .....	262	<i>Mac Leayi</i> .....	<i>ibid</i>
<i>virens</i> , L. ....	439	<i>Omaliæ</i> , Constitution of the Family .....	63
Muscipeta barbata, Sw. type of the genus <i>Tyrannula</i> .....	359	<i>Omaseus? nigrita</i> , var. <i>rufifemoratus</i> .....	500
MUSIGNANO, PRINCE OF. Supplement to the Genera of North American Birds, and to the Synopsis of the Species found within the territory of the United States .....	49	<i>Onitis ambigua</i> .....	522
Supplement to "an Account of four Species of Stormy Petrel", ( <i>Thalassidroma</i> , Vigors) .....	89	Orang Otang, account of a pair of hinder hands of, 579—how distinguished from the Pongo ..	580
Notice of a Non-descript Species of Grouse, from North America .....	212	Ord, Mr. G., analysis of his account of a new species of <i>Arvicola</i> .....	260
Notice of his Observations on the Nomenclature of Wilson's American Ornithology, 261,—of his Description of a new species of South American <i>Fringilla</i> , 261,—of his Descriptions of two new species of Mexican Birds, 261—of his Descriptions of ten Birds from South America, 262.		Organic remains in carboniferous limestone at Torbay, 607,—in conglomerate near Quebec, 608,—in transition limestone in Cumberland .....	609
Notice of his American Ornithology, 467—of his Observations on the Nomenclature of Wilson's Ornithology, <i>ibid</i> .		Ornithology, Sketches in; by N. A. Vigors, Esq. ....	240, 432
Of his Additions to the Ornithology of the United States, 587—analysis		Ornithology, On several groups and forms in, not hitherto defined; by William Swainson, Esq. ....	158
		<i>Ornithorhynchus</i> , corrections to a former memoir on, by J. Van der Hoeven .....	252
		<i>Ornithorhynchus paradoxus</i> , structure of its knee-joint .....	598
		<i>Orpheus</i> , a genus of Insectorial Birds .....	167
		<i>Ostræa</i> .....	541
		<i>Rhizophoræ</i> .....	542
		<i>Otis Denhami</i> .....	453

Page	Page		
Otto, Dr. A. W., analysis of his description of <i>Cercopithecus? leucopymnus</i> 249,—Of his description of <i>Antilope suturosa</i> . . . . .	251	<i>Pherusa fucicola</i> , Leach; how distinguished from <i>Gammarus dubius</i> . . . . .	178
Owls; their anatomical structure compared with that of the falcons, &c. . . . .	187	<i>Philonthus politus?</i> Description of its larva . . . . .	58
<i>Oxyglossus</i> , a genus of Insectorial Birds . . . . .	356	Phoca, notice on the organs of the senses in . . . . .	252
Oxytelus fracticornis, the type of a new sub-genus ( <i>Hesperophilus</i> ) . . . . .	62, 510	Phosphuga atrata, Description of its larva . . . . .	61, 509
<i>Oxyurus</i> , a genus of Insectorial Birds . . . . .	354	<i>Phyllostoma Jamaicense</i> . . . . .	238
<i>Pachycephala</i> , a genus of Insectorial Birds . . . . .	174	<i>Physa</i> . . . . .	534
<i>fusca</i> , type of the genus . . . . .	174	<i>marmorata</i> . . . . .	ibid
<i>Pachymya</i> , a new genus of fossil shells . . . . .	283	<i>Physeter polycypus</i> . . . . .	270
<i>Pachystoma</i> , a new genus of shells . . . . .	536	Picus auratus, Wils. type of the genus <i>Colaptes</i> . . . . .	353
Palmyra? <i>ocellata</i> . . . . .	329	<i>Magellanicus</i> . . . . .	430
<i>Paludina</i> . . . . .	537	<i>minutus</i> , L. type of the genus <i>Asthenurus</i> . . . . .	353
<i>parvula</i> . . . . .	537	<i>percussus</i> , Temm. . . . .	444
Parra Jacana, L. . . . .	448	<i>Pipracidea</i> , a genus of Insectorial Birds . . . . .	173
<i>variabilis</i> , L. . . . .	ibid	<i>cyanea</i> , type of the genus . . . . .	174
Parus biarmicus, L. . . . .	85	<i>Pitangus</i> , a genus of Insectorial Birds . . . . .	165
Patella apertura, Mont. the young of <i>Fissurella Græca</i> . . . . .	77	<i>Planaria flaccida</i> . . . . .	488
Payraudeau, B. C. Notice of his Catalogue Descriptif des Annelides et Mollusques de l'Isle de Corse . . . . .	477	<i>lactiflorea</i> . . . . .	489
Pecten distortus ( <i>P. Pusio</i> ) referred to the genus <i>Hinnites</i> . . . . .	71	<i>unicolor</i> . . . . .	488
<i>Pentacrinus Europæus</i> . . . . .	281	Platalea leucorodia, L. . . . .	88
<i>Perameles Bougainville</i> . . . . .	269	Platycarcus, species of . . . . .	244
<i>Perca pulchella</i> . . . . .	377	Plectrophanes Lapponica . . . . .	278
<i>Peristera</i> , a genus of Insectorial Birds . . . . .	360	<i>Plekocheilus</i> . . . . .	532
<i>Perna</i> . . . . .	542	<i>undulatus</i> . . . . .	533
<i>Ephippium</i> . . . . .	543	<i>Podiceps Rolland</i> . . . . .	274
Petrel, Stormy; supplement to an account of four species of; by C. L. Bonaparte, Prince of Musignano, &c. &c. . . . .	89	<i>rubricollis</i> . . . . .	499
<i>Phænopoda</i> , a sub-order of Snakes . . . . .	253	<i>Pæcilus cupreus</i> , var. <i>rufifemoratus</i> , Gyll. . . . .	500, 502
<i>Phæthornis</i> , a genus of Insectorial Birds . . . . .	357	Polyborus Brasiliensis, Vieill. . . . .	434
Phalaropus Wilsonii . . . . .	50	<i>Polybrachionia</i> , a new genus of Polypes . . . . .	403
<i>Phaleris</i> , Temm. . . . .	53	<i>Linneana</i> . . . . .	404
<i>cerorhyncha</i> . . . . .	53	Polynoe imbricata . . . . .	332
<i>Phasianus Gardneri</i> . . . . .	278	<i>lepidota</i> . . . . .	333
Phasma ferula, description of its ovaries . . . . .	257	<i>scabra</i> . . . . .	331
Pheasants, Hen, On the change in the Plumage of some . . . . .	291	Porpita, how distinguished from <i>Polybrachionia</i> . . . . .	404
		Procellaria Leachii, Temm. . . . .	495, 498
		<i>oceanica</i> . . . . .	89
		Prognathus rupipennis . . . . .	505
		Psittacus leucocephalus, L. . . . .	444
		<i>smaragdinus</i> , Gmel. . . . .	430
		<i>Vasa</i> , Le Vaill. . . . .	240
		<i>Pteromys alpinus</i> . . . . .	519
		<i>Sabrinus</i> . . . . .	519
		<i>Pteropleura</i> , a new genus of Saurian Reptiles . . . . .	221
		<i>Horsfieldii</i> . . . . .	222
		<i>Pteropus</i> , Analysis of M. Temminck's Monograph of the genus . . . . .	455

	Page		Page
<i>Pteropus Ægyptiacus</i> .....	458	He is appointed Agent to the	
<i>amplexicaudatus</i> .....	ibid	Malay States .....	34
<i>dasymallus</i> .....	456	He accompanies the expedition	
<i>edulis</i> .....	455	against the Dutch Settlement	ibid
<i>Edwardsii</i> .....	ibid	He is nominated Lieutenant-	
<i>Geoffroyi</i> .....	458	Governor of Java and its De-	
<i>griseus</i> .....	457	pendencies.....	36
<i>Javanicus</i> .....	455	His administration in Java....	39
<i>Keraudrenius</i> .....	269, 457	His reinstatement of the Bata-	
<i>marginatus</i> .....	458	vian Literary Society .....	40
<i>medius</i> .....	455	His Anniversary Discourses to	
<i>melanocephalus</i> .....	457	the Society .....	41
<i>minimus</i> .....	ibid	His Administration in Java	
<i>pallidus</i> .....	ibid	resumed.....	382
<i>personatus</i> .....	ibid	Encouragement afforded by him	
<i>phaiops</i> .....	456	to Natural History .....	391
<i>poliocephalus</i> .....	ibid	Eulogium on him by the Presi-	
<i>rostratus</i> .....	457	dent of the Royal Society....	288
<i>rubricollis</i> .....	456	<i>Rallus chircote</i> .....	588
<i>stramineus</i> .....	458	<i>melanurus</i> .....	ibid
<i>titthæcheilus</i> .....	ibid	<i>Noveboracensis</i> .....	50
<i>vulgaris</i> .....	456	<i>Rana pipa</i> , notice of a paper on	
<i>Ptiliogonatus</i> , a genus of Insesso-		its anatomy .....	255
rial Birds.....	164	Reptiles, Saurian; Synopsis of the	
<i>cinereus</i> .....	ibid	Species of, collected in India	
<i>Puffinus Berard</i> .....	274	by Major-General Hardwicke;	
<i>Pullastra</i> , a new genus of bivalve		by Major-General Hardwicke	
Shells .....	134	and J. E. Gray, Esq.....	213
<i>Puncturella</i> , a new genus of Shells			
<i>Flemingii</i> .....	77		
<i>Pyrrhula collaris</i> .....	440		
<i>falcirostris</i> } Tenm. {			
<i>cinereola</i> } types of the {	348		
} genus <i>Sper-</i> {			
} <i>mophila</i> } {			
<i>nigra</i> , Vieill.....	440		
<i>Pyxis</i> , a new genus of Land Tor-			
toises .....	514		
Quadrupeds procured by Capt.			
Franklin, characters of, by Dr.			
RICHARDSON .....	516		
<i>Quisculus versicolor</i> , Vieill. ....	442		
Radiata Caribæana (No. 1) ....	403		
RAFFLES, SIR THOMAS STAMFORD.			
Some Account of his Life and			
Writings, &c. by E. W. Brayley,			
jun.....	1, 382		
Sketch of his Character .....	19		
His birth, education, and early			
life.....	20		
His arrival in the East .....	21		
He becomes Secretary to the			
Government of Prince of			
Wales's Island .....	30		
His Researches in Malayan His-			
tory .....	31		
His introduction to Lord Minto	33		
		REVIEWS OF BOOKS, &c.	
		<i>Acta (Nova) Academiæ Leopoldi-</i>	
		<i>no-Carolinæ. Tom. xii. pars. 3.</i>	249
		Audubon's Birds of America,	
		No. I .....	469
		Berlin Transactions for 1824 ....	590
		Bevan's Honey-Bee .....	474
		Bonaparte's American Ornitho-	
		logy, Vol. i. ....	467
		Observations on the	
		Nomenclature of Wilson's Orni-	
		thology .....	ibid
		Coulson's Translation of Blumen-	
		bach's Manual of Comparative	
		Anatomy .....	478
		Curtis's British Entomology,	
		Nos. xxii—xxiv. ....	130
		xxv—xxxvi .....	285
		Denham's Travels in Central Africa	452
		Fox's Synopsis of the Newcastle	
		Museum.....	478
		Godart's Histoire Naturelle des	
		Lépidoptères de France, Tom.	
		vii. 1ère Partie .....	472
		Gyllenhal's Insecta Suecica, Tom.	
		i. pars iv. ....	473
		Histoire Naturelle des Mammifères.	
		Livraisons 52 & 53....	140



Page	Page
Jardine and Selby's Illustrations of Ornithology . . . . .	469
Jennings's Ornithologia . . . . .	470
Journal of the Academy of Natural Science of Philadelphia. Vol. iv. Part 2, 260—v. part 1 . . . . .	586
King's Capt. Narrative of a Survey of the Coasts of Australia . . . . .	135
Kirby & Spence's Introduction to Entomology, Vols. iii. and iv. . . . .	124
Lesson's Manuel de Mammalogie . . . . .	464
Atlas de Mammalogie . . . . .	465
Linnean Transactions, Vol. xv. Part 1, 275—Part 2 . . . . .	578
Meigen's Systematische Beschreibung der Europäischen Zweiflugeligen Insekten. Band v. . . . .	473
Payraudeau's Catalogue Descriptif des Annelides et Mollusques de l'Île de Corse . . . . .	477
Risso's Histoire Naturelle de l'Europe Méridionale, &c. Tomes i. & iv . . . . .	475
Tomes iii. & v. . . . .	592
Selby's Illustrations of British Ornithology . . . . .	469
Sowerby's Genera of Recent and Fossil Shells—No. xxviii. . . . .	133
No. xxix . . . . .	284
Mineral Conchology, Nos. lxxxiv—xcvi . . . . .	282
Stephens's Illustrations of British Entomology. Nos. 1—8 . . . . .	470
Sturm's Catalog meiner Insekten-Sammlung . . . . .	474
Temminck's Monographies de Mammalogie. Livraisons, v—vii. . . . .	455
Thompson's Memoir on the Pentacrinus Europæus . . . . .	281
Treitschke's Schmetterlinge von Europa, Band v. Abth. i. & ii . . . . .	472
Wagler's Systema Avium. Pars Ima . . . . .	465
Weruer's Atlas des Oiseaux d'Europe . . . . .	468
Woods's Introductory Lecture on the Study of Zoology . . . . .	479
Voyage autour du Monde, par Freycinet. Partie Zoologique, par MM. Quoy & Gaimard. Livraisons i—xiii. . . . .	266
<b>RICHARDSON, JOHN, M.D.</b> , Short characters of a few Quadrupeds procured on Capt. Franklin's late expedition . . . . .	516
Risso, A. Notice of his Histoire Naturelle des Principales Productions de l'Europe Méridionale, &c. Tomes i. & iv. 475—Tomes iii. & v . . . . .	592
Rosenthal, Dr. F. Notice of his paper on the organs of the senses in the Seals . . . . .	252
Rudolphi, Notice of his paper on the Orang-Otang, and the Silurus electricus. . . . .	590
<i>Salamandra cylindracea</i> . . . . .	588
<i>punctatissima</i> . . . . .	263
<i>symmetrica</i> . . . . .	588
<i>tigrina</i> . . . . .	ibid
<i>Saxicola</i> , Bechst. a genus of Insectorial Birds . . . . .	172
Say, Mr. T., Notice of his paper on a new species of <i>Modiola</i> , 265—of his descriptions of Hemipterous Insects, 265—of new species of Hister and Hololepta, 589—of Coleopterous Insects, inhabiting the United States, 589—of Freshwater and Land Shells, 589—of <i>Asterias</i> , L., inhabiting the Coasts of the United States . . . . .	589
<i>Scalaria Clathratula</i> , its animal Zoophagous . . . . .	342
<i>Scaphidium Armadillo</i> , Gyll. . . . .	501
<i>Scarabæus femoralis</i> . . . . .	520
<i>Scincus bicolor</i> . . . . .	263
<i>unicolor</i> . . . . .	588
<i>Sciurus quadrivittatus</i> . . . . .	519
<i>Sclerurus</i> , a genus of Insectorial Birds . . . . .	356
<i>Scolopax major</i> , L. . . . .	88
<i>Seiurus</i> , a genus of Insectorial Birds . . . . .	171
Selby, P. J. Esq. Notice of his Description of the <i>Plectrophanes Lapponica</i> . . . . .	278
<i>Seps sex-lineata</i> . . . . .	262
Serpulæ, account of the animal inhabitants of two British; by the Rev. M. J. Berkeley . . . . .	229
<i>Serpula Arundo</i> , Description of its animal . . . . .	ibid
<i>Filograna</i> , Description of its animal . . . . .	230
complexa, Turt. referred to <i>S. Filograna</i> , L. . . . .	231
lobata, Mont. an external shell . . . . .	78
concamerata, Mont. do. . . . .	79
<i>Setophaga</i> , a genus of Insectorial Birds . . . . .	360

Page	Page
Sheep, Notes on its dentition.... 252	<i>Spermagra</i> , a genus of Insectorial Birds..... 346
Shells; Description of some new and rare; by W. J. Broderip, Esq. 81	<i>Spermophila</i> , a genus of Insectorial Birds..... 348
Fossil, found at Stonesfield, 417	<i>Spermophilus lateralis</i> ..... 519
Sheppard, Rev. R. and Rev. W. Whitear; Notice of their Catalogue of the Norfolk and Suffolk Birds..... 278	<i>Spharoma rugicauda</i> , Leach?.... 180
<i>Siagonium quadricorne</i> , Kirby; On it, and on other portions of the Brachelytra (Staphylinus, Lin.) by Mr. J. O. Westwood .. 56, 505	<i>Sphargide</i> ..... 516
Description of its larva, 58, 504	<i>Sphargis</i> ..... ibid
<i>Sialia</i> , a genus of Insectorial Birds 173	Spiders; On the means by which those which produce Gossamer effect their aerial excursions .. 296
<i>Simia Satyrus</i> , how distinguished from the Pongo..... 580	<i>Spilosoma</i> , a new genus of Lepidopterous Insects ..... 189
<i>Sittasomus</i> , a genus of Insectorial Birds ..... 355	<i>Spio viridis</i> ..... 486
Smith, Dr. A., Analysis of his Descriptions of two Quadrupeds inhabiting the Cape of Good Hope ..... 580	<i>vulgaris</i> ..... 336, 487
Snail, its locomotive power whence derived ..... 599	Staphylinidæ, figures of their larvæ, 60, 506
Snakes, inferior extremity in.... 253	Staphylinus, Linn., Mr. Westwood on ..... 56
	Additional Observations to and Corrections of, a Paper on the Genus; by J. O. Westwood, F.L.S..... 504
	<i>Stenopus</i> , a new genus of Helicidæ ..... 527
	<i>cruentatus</i> ..... ibid
	<i>lividus</i> ..... 528
	STEPHENS, J. F. Esq. Note on Mr. Haliday's Paper, with a Description of a new species of Anopheles ..... 502
	Notice of his Illustrations of British Entomology 470
SOCIETIES, LEARNED; THEIR ZOOLOGICAL PROCEEDINGS:—	<i>Sterna pelecanoides</i> ..... 136
Geological Society ..... 303, 607	<i>Sternothærus</i> ..... 514
Linnean Society ..... 593, 598	<i>Strix flammea</i> L ..... 438
Zoological Club of ditto ... 298, 601	<i>nana</i> ..... 427
Royal Society ..... 287, 595	<i>occipitalis</i> , Temm. .... 438
Zoological Society..... 143, 308, 610	<i>rufipes</i> ..... 426
Royal Academy of Sciences at Paris.... 310	Sturm, Jacob; Notice of his Catalog seiner Insekten-Sammlung 474
<i>Sorex Fosteri</i> ..... 516	<i>Sturnella Ludoviciana</i> , Vieill. .. 442
<i>palustris</i> ..... 517	<i>Sturnus militaris</i> ..... 429
SOWERBY, Mr. G. B. On the Shells of an Acephalous Molluscum of the Family of Pectinidæ, for which the Generic name of Hinnites has been proposed by M. DeFrance; together with the characters of several species ..... 67	<i>Succinea Barbadosis</i> ..... 532
Note on the <i>Cardita camerata</i> ..... 526	SWAINSON, WILLIAM, Esq. Sketch of the Life and Character of the late Count de Lacépède ..... 73
Analysis of his genera of recent and fossil Shells ..... 133	On several groups and forms in Ornithology, not hitherto defined ..... 158, 343
Sowerby, G. B. and J. D. C. Notice of their Genera of Recent and Fossil Shells, No. xxix... 284	Swallow and Cuckoo, yearly appearance of ..... 319
Sowerby, J. D. C. Notice of his Mineral Conchology. Nos. lxxxiv—xcvi..... 282	Swiftfoot, cream-coloured ..... 492
	<i>Sylvia Canadensis</i> , Lath., .... 439
	coronata, Lath., ..... ibid
	Dartfordiensis..... 498
	<i>dorsalis</i> ..... 439
	<i>maculosa</i> , Lath., ..... 440
	<i>obscura</i> ..... 428

	Page		Page
<i>Sylvia pensilis</i> , Lath., .....	440	<i>Tiaris</i> , a genus of Insectorial Birds	351
<i>pusilla</i> , Wils. type of the		<i>Tigrisoma</i> , a genus of Grallatorial	
genus <i>Sylvicola</i> .....	169	Birds .....	362
<i>Sialia</i> , Wils. type of the		<i>Tiliqua carinata</i> .....	227
genus <i>Sialia</i> .....	173	<i>trivittata</i> .....	ibid
<i>spinicauda</i> , Lath., .....	428	<i>Todus viridis</i> , L. ....	439
<i>Suecica</i> , Lath., .....	497	Tortoises, Land, Description of	
<i>Trichas</i> , Wils. ( <i>Trichas</i>		three new species of; by Thos.	
<i>personatus</i> ), the type of the ge-		Bell, Esq. ....	419
nus <i>Trichas</i> .....	167	Tortrix, anatomy of its hinder ex-	
<i>vermivora</i> , Wils., type of		tremity .....	253
the genus <i>Vermivora</i> .....	170	<i>Totanus chloropygius</i> , Vieill. ....	447
<i>Sylvicola</i> , a genus of Insectorial		<i>flavipes</i> .....	448
Birds .....	169	Tracheæ of Birds, Observations	
<i>Synallaxis</i> , Vieill., a genus of In-		on the .....	295
sectorial Birds .....	168	<i>Trachysaurus rugosus</i> .....	137
<i>rutilans</i> , Temm., type of		Treitschke, F. Notice of his Con-	
the genus .....	ibid	tinuation of Ochsenheimer's	
Systems and Methods in Natural		<i>Schmetterlinge von Europa</i> ...	472
History, discussed. ....	294, 298, 578	<i>Trichas</i> , a genus of Insectorial	
		Birds .....	167
<i>Tanagra</i> , a genus of Insectorial		<i>Trichius</i> ; Natural groups into	
Birds .....	346	which that genus may be re-	
<i>Episcopus</i> , L. the type		solved .....	156
of the genus .....	ibid	<i>Trichius Bigsbyi</i> .....	155
<i>Guianensis</i> , Sw. type		<i>fasciatus</i> .....	157
of the genus <i>Cyclorhis</i> .....	162	<i>hemipterus</i> , Fab., type	
<i>Tatao</i> , L. type of the		of the genus <i>Acanthurus</i> .....	155
genus <i>Aglaia</i> .....	347	<i>Trigonia impressa</i> , a new fossil	
<i>Zena</i> .....	441	species found at Stonesfield. ....	411
<i>Tantalus Loculator</i> , L. ....	447	<i>Tringa minuta</i> .....	88
<i>Tardivola</i> , a genus of Insectorial		<i>pusilla</i> .....	88, 302
Birds .....	345	<i>Temminckii</i> , Leisler ....	302
Temminck, C. J. Analysis of his		<i>Trionychidæ</i> .....	515
<i>Monographies de Mammalogie</i> .		<i>Trionyx</i> .....	516
<i>Livraisons</i> , v—vii. ....	455	<i>Trochilus chryso-</i> } types of the	
<i>Terebratula costata</i> , Lowe, possi-		<i>bronchus</i> Sh. } genus <i>Phæth-</i>	
bly the <i>T. aurita</i> , Flem. ....	79	<i>superciliosus</i> } <i>ornis</i> .....	357
<i>Terrapene</i> , .....	514	<i>Trochilus</i> , a genus of Insectorial	
<i>Testudinata</i> , Characters of the		Birds .....	357
order, families, and genera of,		<i>collaris</i> , Sh. } types of	
by Mr. BELL. ....	513	<i>pileatus</i> , Lath. } the	
<i>Testudinata</i> , their affinities illus-		<i>superbus</i> , L. } genus ...	ibid
trated .....	602	<i>colubris</i> , L. } types of	
<i>Testudinida</i> .....	513	<i>macrourus</i> , L. } genus <i>Cy-</i>	
<i>Testudo</i> .....	514	<i>platurus</i> , Sh. } <i>nanthus</i> ..	357
<i>Actinodes</i> .....	419	<i>falcatus</i> , Sw. } types of	
<i>Pardalis</i> .....	420	<i>latipennis</i> , Sw. } genus	
<i>Tentoria</i> .....	ibid	<i>Campylopterus</i> .....	358
<i>Tetrao Urophasianus</i> .....	213	<i>mango</i> , L. } types of the	
<i>Thalassidroma</i> , Vigors .....	89	<i>niger</i> , Sw. } genus <i>Lam-</i>	
<i>Thanatophilus rugosus</i> , Descrip-		<i>pella</i> , L. } <i>pornis</i> .....	358
tion of its larva .....	509	<i>Troglodytes furva</i> , Vieill. ....	429
<i>Thetis</i> , a new genus of fossil Shells	283	<i>Trogon temnurus</i> , Temm. ....	443
Thompson, John V. Notice of his		<i>Turdus atriceps</i> , type of the genus	
<i>Memoir on the Pentacrinus Eu-</i>		<i>Brachyopus</i> .....	164
<i>ropæus</i> .....	281	<i>aurocapilla</i> , Wils. type of	
		the genus <i>Seiurus</i> .....	171

	Page		Page
<i>Turdus Falcklandii</i> .....	271	tion of the Australian Birds in the collection of the Linnean Society. . .	276
polyglottus, Wils. type of the genus Orpheus .....	167	Vision in Invertebrate Animals, nature of .....	317
rubripes, Temm. ....	439	<i>Voluta</i> , as circumscribed.....	284
TURTON, Dr., on the genus <i>Lacuna</i> .....	190	<i>antiqua</i> .....	234
<i>Tyrannula</i> , a genus of Insectorial Birds .....	358	<i>dubia</i> .....	81
<i>Tyrannus</i> , a genus of Insectorial Birds .....	165	<i>lyriformis</i> .....	83
intrepidus, type of the genus <i>ibid</i>		<i>multicostata</i> .....	82
Nengeta, type of the genus <i>Nengetus</i> .....	166	<i>Volute</i> , description of a fossil, from St. Peter's Mountain, near Maestricht; by W. J. Broderip, Esq. ....	234
Savana, Vieill, type of the genus <i>Milvulus</i> .....	166	<i>Vultur fulvus</i> , Temm.....	496
sulphuratus, Vieill, type of the genus <i>Pitangus</i> .....	165		
Upupa Epops .....	498	Wagler, Dr. J. Notice of his Systema Avium .....	465
<i>Uromastix Hardwickii</i> .....	219	Werner, J.C. Notice of his Atlas des Oiseaux d'Europe .....	468
<i>Belliana</i> .....	220	WESTWOOD, Mr. J. O., his observations upon <i>Siagonium quadricorne</i> of Kirby, and on other portions of the <i>Brachelytra</i> , ( <i>Staphylinus</i> , Linn.) .....	56
<i>Urotomus</i> , a genus of Insectorial Birds .....	166	Additional observations to, and corrections of, a Paper upon the genus <i>Staphylinus</i> of Linnæus... ..	504
<i>Ursus</i> , notice of a species of, from Nepal.....	276	Wied, Prince Maximilian of, analysis of his description of <i>Coluber Lichtensteinii</i> .....	255
		Wood, Mr. W. W., analysis of his description of a new species of Salamander .....	263
Vanderhoeven, J.; analysis of his Corrections to his memoir on <i>Ornithorhynchus</i> .....	252	Woods, Henry, Esq. Notice of his Introductory Lecture on the study of Zoology .....	479
<i>Varanus Scincus</i> , Merr.....	226		
Vasa, the Grand, of M. Le Vaillant .....	240	<i>Xanthornus Gasquet</i> .....	272
<i>Vermivora</i> , Wils. a genus of Insectorial Birds .....	170	<i>Xiphorhynchus</i> , a genus of Insectorial Birds .....	354
Vespertilionidæ, notice of two species of, forwarded by W. S. MacLeay, Esq.; by Thomas Horsfield, M.D.....	236		
VIGORS, N. A. Esq. A Reply to some Observations in the "Dictionnaire des Sciences Naturelles," upon the newly characterized groups of the <i>Psittacidæ</i> ..	91	YARRELL, WILLIAM, Esq. On the occurrences of some rare British Birds .....	85, 497
Sketches in Ornithology..	240, 432	Some observations on the Anatomy of the British Birds of Prey.....	181
and Dr. HORSFIELD; their notice of a new genus of Mammalia, found in Sumatra by Sir T. Stamford Raffles .....	246	Observations on the Osteology of the Fennec....	401
Descriptions of two species of the genus <i>Felis</i> , in the collection of the Zoological Society .....	449	Report on the Osteology of the <i>Chlamyphorus truncatus</i> .....	544
Notice of their Descrip-			

*Index to Vol. III.*

627

	<i>Page</i>		<i>Page</i>
Analysis of his Paper on the change in the Plu- mage of some Hen- Pheasants .....	291	of his observations on some rare British Birds .....	301
Notice of his observations on the Tracheæ of Birds, &c. ....	295, 581	Zoology of the Caribæan Islands, observations on, by the Rev. L. GUILDING.....	527

END OF VOL. III.

The ... ..  
... ..  
... ..

...







