

of a few instances, were we to take the eggs of our British birds as our only guide, we should arrive at the best and most approved arrangement of the different genera."

I am aware that exceptions and discrepancies may be pointed out. The colour deposited on the egg-shells is an animal matter, dependent on the health of the bird. Fear or confinement acting constitutionally upon the organs of secretion are known to affect this colouring-matter.

The greatest amount of variation is found to occur among the *Laridæ*.

With these preliminary remarks, I proceed to the description of a collection of eggs of some of the birds of Chile, obtained by Mr. Bridges, and exhibited here by Mr. Cuming.

*Cathartes Iota* of Molina; Chilian name *Ioté*.—The egg of this Vulture measures 2 in.  $\frac{8}{10}$  in length, and 1 in.  $\frac{9}{10}$  in breadth: the shape is rather peculiar, being broadest at the centre and tapering gradually in both directions, so as to become pointed at both ends. The ground colour is white, slightly tinged with red; blotched with pale red; spotted and speckled with dark brownish red.

*Haliaëtus aquia*, Temminck; *Aquila* of the Spanish; *Calquin* of the Indians.—The egg is 2 in.  $\frac{1}{2}$  in length by 2 in.  $\frac{1}{2}$  in breadth; elliptic; white, with a few spots of dark red and numerous spots and speckles of pale red.

*Polyborus Brasiliensis*, Swainson; Chilian name *Traro* and *Taro*.—The egg of this bird is 2 in.  $\frac{4}{10}$  in length by 2 in. in breadth; blotched, spotted and speckled with dark red, on a ground of reddish white. This egg, in its colour and markings, resembles those of our British Osprey.

*Milvago pezoporos*, Meyen; Chilian name *Tuique*.—The egg measures 1 in.  $\frac{8}{10}$  by 1 in.  $\frac{4}{10}$ ; white, tinged with red; blotched, spotted and speckled with dark brownish red.

*Strix pratincola*, Bonap.; *Strix flammea* of Wilson; *Strix Americana* of Audubon. Screech Owl.—The egg is pure white, and measures 1 in.  $\frac{1}{2}$  in length and 1 in.  $\frac{4}{10}$  in breadth.

*Turdus Falklandicus* of Quoy and Gaim.; Chilian name *Torzal*.—This egg closely resembles those of our British Missel Thrush. The ground colour pale bluish white, spotted and speckled with pale red. The length 1 in.  $\frac{2}{10}$ , the breadth three-quarters of an inch.

*Geositta canicularia* of Vieillot; Chilian name *Caminante*.—The egg is pure white, and measures  $\frac{9}{10}$  of an inch in length by  $\frac{7}{10}$  of an inch in breadth.

*Cyanotis omnicolor*, Swains.; Chilian name *Pajaro*.—This small egg measures only  $\frac{1}{2}$  of an inch in length by half an inch in breadth; of a pure and spotless white, but some specimens of the eggs are tinged with pale buff-colour.

*Crithagra brevirostris*, Gould; Chilian name *Chirique*.—The egg is white, tinged with green, speckled with brownish red, and measures  $\frac{7}{10}$  of an inch in length by half an inch and  $\frac{1}{2}$  in breadth.



*Fringilla Diuca*, Mol. The Chilian name is *Thiuca* or *Diuca*.—The egg of this bird measures 1 inch in length by  $\frac{7}{10}$  of an inch in breadth: the ground colour white, tinged with green, more or less mottled all over with two shades of greenish brown.

*Phytotoma rara*, Mol. Called *Rara* by the natives.—The egg measures 1 inch in length by  $\frac{7}{10}$  of an inch in breadth, and is of a delicate bluish green, with a few specks of dark reddish brown at the larger end.

*Sturnella Loica*, Mol. The Chilian name is *Loica*.—The egg of this bird measures 1 in.  $\frac{1}{10}$  in length by  $\frac{8}{10}$  of an inch in breadth: the ground colour white, spotted and speckled with pale red, dark brownish red, and purple grey.

*Icterus Thilius*, Mol. The Chilian name *Thili* or *Trili*.—This egg measures 1 inch in length by  $\frac{7}{10}$  of an inch in breadth: the ground colour white, sometimes tinged with buff, with a few spots and streaks of dark reddish brown deposited over the larger end.

*Zenaida aurita*, Temm.; Chilian name *Tortola*.—The egg of this species, which is the most common of the *Columbidae* found in Chile, is white, and measures 1 in.  $\frac{3}{20}$  in length by  $\frac{9}{10}$  of an inch in breadth.

*Columbina strepitans*, Spix; *Tortolita cyana* of the Chilians.—The egg of this pretty little species of Dove is also of a pure white, smooth and shining; the length  $\frac{9}{10}$  of an inch, the breadth  $\frac{7}{10}$ .

*Nothura perdicaria*, G. R. Gray; *Perdiz* of the Chilians.—This beautiful egg, of a uniform rich purple-chocolate brown, the surface smooth and polished, measures 1 in.  $\frac{9}{10}$  in length and 1 in.  $\frac{4}{10}$  in breadth.

Two other unnamed eggs in this collection, of the same character and colour as that of the *Nothura* last-described, and probably belonging to two species of the genus *Tinochorus* found in Chile, may be here referred to; the larger one 2 in.  $\frac{1}{10}$  in length by  $1\frac{3}{4}$  in. in breadth; the other 1 in.  $\frac{8}{10}$  in length and  $1\frac{1}{4}$  in. in breadth. Elliptic in shape, of a rich and uniform purple-chocolate brown; the surface highly polished.

Another egg in this collection, not named, but apparently belonging to some species of *Tinamou*, may be mentioned on account of its beauty. It measures 1 in.  $\frac{3}{10}$  in length, and 1 in.  $\frac{1}{20}$  in breadth; the shape is elliptic, and the colour a uniform delicate siskin-green.

*Rhea Darwini*, Gould, 'Voyage of the Beagle,' Birds, page 123, plate 47.—The egg of this fine species measures  $4\frac{3}{4}$  in. in length and  $3\frac{1}{2}$  in. in breadth: elliptic in form; the colour whitish, but tinged with very pale asparagus-green. This egg is figured by Dr. Thienemann in his new work now in course of publication on the incubation of birds in general, part 1. page 4. tab. 2. fig. 2, with the additional name of *Rhea pennata* D'Orbignii.

*Scolopax Paraguaia*, Vieill. Called by the Chilians *Avecasina* and *Porrotero*.—The egg is  $1\frac{3}{4}$  in. long and  $1\frac{1}{4}$  in. broad; olive-brown, blotched and spotted with dark reddish brown and pale brown. This



egg, in colour and markings, exactly resembles the egg of our most common British Snipe.

*Vanellus Chiliensis*.—The egg thus marked measures 1 in.  $\frac{9}{10}$  in length and 1 in.  $\frac{9}{20}$  in breadth: olive-brown, spotted with black and greyish brown; closely resembling the eggs of our British *Vanellus*.

*Rallus sanguinolentus*, Swains.; Chilian name *Piden*.—This egg is 1 in.  $\frac{8}{10}$  long and  $1\frac{1}{4}$  in. in breadth: the ground colour white, tinged with red, partially spotted with yellowish red. In its ground colour and markings very similar to the egg of our British *Rallus*.

*Gallinula crassirostris*, J. E. Gray. Called by the Chilians *Taguita*.—The egg reddish white, spotted with two shades of reddish brown; the length 1 in.  $\frac{8}{10}$  by 1 in.  $\frac{2}{10}$  in breadth.

*Fulica galeata*, G. R. Gray.—This egg, closely resembling that of our Common Coot in its colours and markings, measures 2 in.  $\frac{1}{10}$  in length, and  $1\frac{1}{2}$  in. in breadth: pale brownish white, or stone-colour, speckled over with nutmeg-brown.

*Cygnus nigricollis*, Gmelin. *Cisne* is the Chilian name for this Black-necked Swan. The egg is near 4 in. in length by  $2\frac{1}{2}$  in. in breadth; white, tinged with pale buff.

*Rhynchaspis maculatus*. The Chilian name of this bird is *Pato Abaston*.—The egg measures 2 in.  $\frac{3}{10}$  in length and  $1\frac{3}{4}$  in. in breadth; dull, greyish white, tinged with green.

*Querquedula cærulata*, Eyton. The Chilian name of this little Duck (the *Anas Rafflesii* of Vigors) is *Pato colorado*.—The egg is 2 in. in length and 1 in.  $\frac{4}{10}$  in breadth: the colour a uniform pale buffy white.

*Anas Bahamensis*? Linn., called *Pato Jergon grande* by the Chilians, produces an egg  $\frac{1}{20}$  of an inch larger in both its dimensions than the egg of the *Pato colorado* last-described, and of a richer and more decided buff-colour.

*Podiceps Chilensis*, Garnot. Called by the Chilians *Guala* and *Gualon*.—This large species of Grebe produces an egg of 2 in.  $\frac{3}{20}$  in length by  $1\frac{1}{2}$  in. in breadth, of a dull white, stained with earthy brown.

*Podiceps Kalipareus*, Quoy and Gaim. The Chilian name *Gualita de la Mar*.—The egg of this Grebe measures 1 in.  $\frac{8}{10}$  by  $1\frac{1}{4}$  in., of a dull white, some of them more or less stained with dirty brown, depending on the number of days they may have been deposited in the nest.

The egg of a third species of *Podiceps*, bearing the Chilian name *Gargari*, is yet a little smaller than the egg of the *Gualita* last described, measuring only 1 in.  $\frac{6}{10}$  in length and 1 in.  $\frac{1}{10}$  in breadth; the colour as usual in the eggs of all the Grebes.

## 2. DESCRIPTION OF A NEW GENUS OF EMYDÆ. BY J. E. GRAY, Esq., F.R.S., F.Z.S. ETC.

In the museum of the Zoological Society is a fine specimen of a



large freshwater Tortoise, presented by Lieut. Mawe, R.N., who found it in South America in the year 1833.

It is marked by Mr. Fraser "*Emys Mawii*, Bibron, original of M. B.'s description, No. 6899," but I can find no such species described in M. Bibron's work, nor is it an *Emys* as defined by that author.

It differs from all the known Emydæ in being covered with very thin membranaceous scales, and in having a broad sternum with a series of four large distinctly defined plates placed over the sterno-costal suture. The gular plates are very small, and there are no axillary or inguinal plates.

My genus *Platystemon* has the same kind of sterno-costal plates, but quite a differently formed shell. The head is very large and the tail elongate.

#### DERMATEMYS, n. g.

*Ch. gen.*—*Testa* ovalis, gibba, acarinata, in lateribus rotundata, margine posteriore expanso, paulò reflexo, scutellis membranaceis tenuissimis defenso. *Scutellæ marginales* posteriores latæ. *Sternum* planum antè rotundatum postè emarginatum. *Squamæ gulares* parvæ, triangulares, testæ superiori per longum symphysin affixæ. *Sutura sterno-costalis* squamis magnis quatuor defensa, postremis duabus maximis squamis, minima anteriore. *Scutellæ axillares et inguinales* nullæ. *Testa* vix ad aperturam contracta.

Head —? Toes webbed? Claws —?

Shell oblong, convex, not keeled; sides rounded, hinder edge expanded, slightly reflexed, covered with very thin membranaceous shields. The hinder marginal shields broad. Sternum flat, rounded in front, notched behind: the gular plates small, triangular, united to the upper shell by a long symphysis; the sterno-costal suture covered with four large distinctly defined plates; the anterior smaller, the two hinder largest. The axillary and inguinal plates none. The cavity of the shell is scarcely contracted at the opening.

*Hab.* South America.

*Dermatemys Mawii*, n. s.—Vertebral plates: 1st broad, seven-sided; 2nd, 3rd and 4th longer than broad. Colour pale brown; the upper surface covered with small, close, irregular depressions of a darker brown colour; the shields pale, nearly transparent, very brittle when dry; the under surface uniform pale yellowish white, with slightly sunken grooves.

Length of upper shell 17 inches; width 11 inches; length of sternum  $12\frac{1}{2}$  inches.

*Remarks.*—The specimen appears to be not quite full-grown. It has much of the external appearance of *Phrynops Geoffroyii*, and the general thinness of the scales of *Chelydidæ*; but there is no appearance of any scar on the inner surface of the sternum for the attachment of the pelvis; and though the gular scale is worn and nearly obliterated, yet it is sufficiently distinct to show that it has no inter-gular plate.



3. DESCRIPTIONS OF NEW CRUSTACEA FROM THE EASTERN SEAS.  
BY ADAM WHITE, F.L.S.

Family INACHIDÆ.

Genus DOCLEA, Leach.

DOCLEA CALCITRAPA, White, n. s., List of Specimens of Crust. in Brit. Mus. p. 4.

Carapace with seventeen large spines on the back and sides, and sixteen smaller tubercles on the upper surface; seven of the large spines down the middle of carapace, six of them erect, the sixth springing from the base of the much-elongated horizontal terminal spine; the last of the spines of the side much longer than the other three. The whole surface seems to have been covered with hairs. The four hind pairs of legs are very long and slender.

Breadth of carapace 1 inch 4 lines; length 1 inch 10 lines.

A species distinguishable at first sight from the four species hitherto described, of all of which there are specimens in the Museum Collection.

*Hab.* Philippine Islands (Zebu): Brit. Museum. From Mr. Cuming's collection.

Family MAIADÆ.

HYASTENUS, White.

Carapace rather oblong, rounded on the sides behind, before and behind the eyes straight; a slight transverse groove in upper orbit; front with two horns as long as the carapace, at first parallel and then diverging and directed slightly downwards; outer antennæ with all the joints cylindrical; the insertion of the basal joint concealed by the frontal horn.

Fore-legs slender; second pair of legs the longest and very slender; terminal joint with the edge spined.

A genus allied to *Hyas* and *Chorinus*, the only species of which was long ago figured in the large work of Seba.

HYASTENUS SEBÆ, White, List of Specimens of Crust. in Brit. Mus. p. 6.

Upper surface somewhat roughish, and covered with a delicate down.

*Cancer araneus cornutus* alter, Seba, Thes. iii. 45. t. 18. f. 12.

*Hab.* Philippine Islands. From the collection of Mr. Cuming.

Also found by Capt. Sir Edward Belcher, C.B.

Family PARTHENOPIDÆ.

CERATOCARCINUS, Adams & White.

Form of the carapace somewhat pentagonal; the sides, over the insertion of the first pair of legs, produced into a large spine directed slightly forwards; front wide and prominent, projecting on each side in the form of conical horns, widely separate from each other. Eyes rather small, peduncles short, the eye fitting into a groove on the side



of the beak. Outer antennæ considerably developed, the terminal appendages at least half the length of the whole antennæ, and projecting beyond the horns of the beak.

First pair of legs much-elongated; the sides nearly parallel; the wrist somewhat pear-shaped, without spines on the inside, the edges of the pincers meeting and serrated. The second pair of legs longer, more slender than the last three pairs; the tarsal joint slender and elongated; fourth and fifth pairs of equal length; the fifth pair, as in *Eumedonus*, placed so high as nearly to conceal the insertion of the fourth pair; the tarsal joints of these legs thick; the claw at the end translucent. Abdomen of male as in *Eumedonus*; the female unknown.

This genus is closely allied to *Eumedonus* of Prof. Milne Edwards (Crust. i. 349), and, like it, comes from the Eastern Seas.

CERATOCARCINUS LONGIMANUS, n. s., List of Specimens of Crust. in Brit. Mus. p. 125.

Two pointed transverse tubercles, tufted with hair at the end, on the back of the carapace, behind the eyes; the first pair of legs covered with minute warts and with several deep longitudinal grooves; the pincers blackish brown, except at the base.

*Hab.* North coast of Borneo (Balambangan): British Museum. Presented by Capt. Sir Edward Belcher, C.B., R.N.

When alive, according to the observations of Arthur Adams, Esq., who found it, the colour of this species is blood-red, with five light bands across the carapace.

#### GONATONOTUS, Adams & White.

Carapace pentagonal, depressed, the lateral angles very sharp; the front very wide, lamelliform, dilated, rounded, slightly notched at the end. Eyes large, prominent; peduncles short, inserted in a deepish notch on the side. Outer antennæ with the terminal appendage elongated.

First pair of legs thickish; the wrist rounded and spined on the inside, the claws serrated on the edge; third and fourth pairs of legs rather longer than the second and fifth; the tarsal joints of the second, third, fourth and fifth pairs of equal size and thickness; the fifth pair of legs inserted above the fourth pair.

Abdomen of female seven-jointed; three or four of the basal joints seen from above. Male unknown.

This genus is allied to *Eumedonus*.

GONATONOTUS PENTAGONUS, n. s., List of Specimens of Crust. in Brit. Mus. p. 125.

Carapace above closely verrucose, the warts depressed; a strongish ridge across the back, extending from one lateral angle to the other, with two tubercles in the middle; the front grooved down the middle; the centre of the back with two longitudinal impressions; terminal joint of abdomen in female verrucose.

First pair of legs verrucose; the pincers grooved.

Mr. Adams found this species on the coast of Borneo. When



alive it is of a brick-red colour, with the chelæ crimson; under surface rufous.

LAMBRUS LAMELLIGER, White, List of Specimens of Crust. in Brit. Mus. p. 12.

Front depressed, flat, thin; upper surface of carapace with three largish protuberances behind, one in the middle and one on each side; carapace longer than wide; sides about the middle crenated; fore-legs very long.

Breadth of carapace  $4\frac{1}{2}$  lines; length  $5\frac{3}{4}$  lines.

*Hab.* Philippine Islands. From Mr. Cuming's collection.

LAMBRUS TURRIGER, White, List of Specimens of Crust. in Brit. Mus. p. 12.

Carapace longer than wide; front small, depressed and considerably grooved in the middle, the side with a small tooth on each side; back of carapace with four elevated spines, thickened and blunt at the end, the first about midway between front and back; behind it another much higher, and one on each side of this; on the hind margin of carapace, in the middle, are two spines.

Arms very long, verrucose; legs very slender and smooth.

Breadth of carapace about 4 lines; length about  $4\frac{1}{2}$  lines.

*Hab.* Philippine Islands: British Museum. From Mr. Cuming's collection.

Also brought by Capt. Sir Edward Belcher, C.B., R.N.

4. ON SOME UNDESCRIBED SPECIES OF LEPIDOPTERA IN THE SOCIETY'S COLLECTION. BY EDWARD DOUBLEDAY, ESQ., F.L.S. &c. &c.

Genus PIERIS.

PIERIS PHAOLA. *Pi. alis omnibus supra albis, anticarum margine externo latè nigro, posticarum punctis sex nigris notato, subtùs pallidè flavescentibus, basi flavis, marginibus externis nigro-punctatis.* Exp. alar.  $2\frac{1}{4}$  unc. vel 57 millim.

*Hab.* Fernando Po.

Above, all the wings white, very slightly tinted with yellowish at the base; anterior wings with the costa narrowly black; the outer margin with a broad black border, dentate internally, broadest at the apex. Posterior wings with a series of seven round black dots on the margin.

Below, pale cream-colour or white, slightly tinged with yellow; palest on the disc of the anterior wings; the base and costa of the anterior and the costa of posterior wings yellow; apex and outer margin of anterior wings with a series of nine black dots, of which the first to the sixth are minute, the seventh larger and double, the eighth and ninth larger than any except the seventh. Posterior wings with a marginal series of seven black dots: the first, second and third very minute, fourth, fifth and sixth progressively larger, seventh small.

Head, thorax and abdomen black, sprinkled especially below with white scales. Antennæ black, annulated with white.

In the collection of the Zoological Society.



This species is closely allied to *P. Eudoxia*, but differs in wanting the bright orange patch at the base of the anterior wings, and in the form and number of the dots on the posterior wings, as well as in the colour of the under surface, which is pure white with a silvery lustre in the males of that species.

PIERIS MATUTA. *Pi. alis omnibus supra albis, apice anticarum nigro; margine posticarum nigro punctato; subtùs albidis basi anticarum costaque posticarum luteis.* Exp. alar.  $2\frac{1}{2}$  unc. vel 63 millim.

*Hab.* Fernando Po.

Wings above white, the anterior with the apex and outer margin as far as the third median nervule irregularly black; a black spot on the margin above the first and second median nervule. Posterior wings with a slender cuneiform dot at the extremity of each nervule. Below, anterior white, the costa itself very narrowly black, the base marked with a broad luteous patch. Posterior wings very pale cream-colour, with slight pearly reflections, the costa at the base luteous. Extremities of the nervules slightly fuscous. Head and thorax black, clothed with white hairs. Abdomen black, covered with white scales. Antennæ black, annulated with white.

#### Genus ATERICA.

ATERICA BARCE. *At. alis omnibus supra æneo-nigris, marginibus externis fuscis, subtùs ochraceis, fascia communi transversa, plaga discoidali anticarum, strigis undatis maculisque brunneis.* Exp. alar.  $2\frac{1}{4}$  unc. vel 55 mill.

*Hab.* Sierra Leone.

Above, all the wings æneo-fuscous, with green and bluish reflections; the outer margin of the anterior broadly fuscous at the apex, less so at the anal angle; a slight fuscous cloud at the end of the cell and another much larger beyond it. Posterior wings with the costal and abdominal margins and the outer angle broadly fuscous; outer margin, except at the angle, narrowly so. Abdominal fold thickly lined with long hairs. Cilia fuscous, spotted with whitish. Below ochrey brown, the anterior wings with a minute dark brown spot in the cell close to the base; a large, irregular, subtriangular, dark brown patch before the middle, divided in the cell by a spot of the ground colour. Beyond the middle is a much-waved abbreviated brown striga, and a similar one extends along the whole outer margin. Between these two strigæ is a transverse band of a vinous brown, commencing at the apex and extending to the middle of the inner margin, narrow at its commencement, broad at its termination, where it occupies nearly the whole space from the middle of the wings to the anal angle, and is divided by a faint ochrey cloud. Posterior wings with a broad reddish brown band across the middle, divided by a pale ochreous spot near the costa, beyond which is a paler brown cloud. Near the margin is a much-waved brown striga, and the outer angle is brown. Near the base is a somewhat reniform brown spot, paler in the centre, and below it a ring of the same colours.



Head, thorax and abdomen fuscous above, rufescent below. Antennæ very long, black.

In the collection of the Zoological Society.

Genus CHARAXES.

CHARAXES PHRAORTES. *Ch. alis omnibus supra fulvis, nigro limbatis maculatisque, anticis serie marginali punctorum, posticis lunularum fulvarum; subtùs saturatè fulvis, fascia media alteraque submarginali argenteis, maculis plurimis, vittisque numerosis nigris argenteo cinctis.* Exp. alar.  $4\frac{1}{2}$  unc. vel 116 mill.

*Hab.* Madagascar.

Above, all the wings fulvous, with a broad black border externally, broadest on the posterior wings, marked on the outer margin of the anterior with a series of fulvous dots between the nervules, and on the posterior just within the margin with a series of lunules also placed between the nervules; this border is irregularly dentate within on the anterior wings, and divided near the apex by a row of four fulvous dots; not dentate internally on the posterior wings, but less defined, being slightly shaded into the fulvous. The base both of the anterior and posterior wings is slightly shaded with fuscous, and the anterior are marked, in the cell, with two rounded spots, an elongate subquadrate one on the disco-cellular nervules, a subquadrate one immediately beyond the cell above the third median nervule, a longer one immediately below this, and another broadly lunate between the first and second median nervule, all black. Between these spots and the black margin is a short submacular band extending from the costa to the second disco-cellular nervule. Outer margin of anterior wings sinuate, dentate, of posterior dentate, caudate.

Below, the anterior wings are bright deep fulvous at the base and along the costa beyond the middle of the wings; marked as above with black spots and a short marginal black band, but all these markings are broadly margined with silvery white; and there are, in addition to the spots of the upper surface, a small round spot in the cell close to the base, and an oval one above the first median nervule near its origin, both black with a silvery border. Beyond the middle is a silvery white irregular band, narrowed on the costa, where it is marked by four black dots, the third and fourth indistinct, broadest on the inner margin, where it becomes of a pearly hue. Between this band and the margin the prevailing colour is a pale fulvous. A band composed of a series of silvery grey lunules commences on the costa and terminates on the submedian nervule. These lunules have their points directed inwards, and are margined internally with black, those nearest the costa less broadly than the others. The terminations of the nervules are bordered with silvery grey, and beyond this with black, and the cilia are spotted with the same colours. The posterior wings are bright deep fulvous, paler towards the outer margin, traversed beyond the middle by a flexuous silvery band. At the base, before the precostal nervule, is an oval black spot bordered with silvery white; beyond this is a macular



band composed of four black transverse vittæ bordered with silvery white, extending from the costa to the abdominal fold; the inner vitta transverse only at its origin, extending down the abdominal to unite with a similar fold which traverses the cell and descends obliquely between the first median nervule and the submedian nervure. The inner margin of the silvery band is marked with a series of black spots and vittæ, and the abdominal fold is beautifully marked with alternate silvery, bright fulvous and black vittæ. Near the outer margin is a broad silvery white band sprinkled with grey and fulvous scales, and clouded with these colours, bordered externally with black. On the outer margin itself is a narrow black border, margined internally with white. Cilia, except on the tail, white.

Head fulvous. Thorax fulvous above, streaked below with fulvous and white. Legs white.

In the collection of the Zoological Society.

This beautiful insect is closely allied to *Ch. Castor*, but may at once be known by the silvery markings below.

5. DESCRIPTION OF *STRIGOPS HABROPTILUS*. BY G. R. GRAY, ESQ.,  
F.L.S. &c.

With reference to the interesting particulars about *Strigops habroptilus*, communicated by Mr. Gould (*suprà* p. 55), I am induced to remark that this singular bird was first noticed under the native name of Kakapo in the Appendix to Dr. Dieffenbach's Travels in New Zealand, where it was suggested to belong to the family of *Cuculidæ*, from the supposed similarity of the few feathers brought by that gentleman to those of the genus *Centropus*. This idea was at once dispelled by the arrival of the perfect specimen now in the British Museum, from which a figure was made by my friend Mr. Mitchell, and published as pl. 105 in the 'Genera of Birds.' The singular appearance of the feathers of the head, and especially their arrangement about the bill, gives it much of the expression of the family *Strigidæ*. It was this resemblance that induced me to give it the above generic name. Dr. Dieffenbach states that its native name implies that its habits are nocturnal: the natives catch the bird by torchlight. He further informs us that it chiefly inhabits the South island of New Zealand, but is very rare even in that locality, which is in some degree the result of the destruction it meets with from the attack of cats and dogs, to which its habit of frequenting the lower branches only of trees the more readily exposes it.

As I have never published a specific character, I subjoin the following:—

*STRIGOPS HABROPTILUS*, G. R. Gray. *Str. olivaceo-viridis viridigriseo tinctus, plumis singulis strigâ medianâ flavâ nigro-marginatâ extus irregulariter transversè nigro-fasciatis, tectricum majorum remigum secundariorumque pogoniis exterioribus caudâque totâ pallidè umbrinis transversè luteo-fasciatis fasciis irregulariter nigro-marginatis; subtùs pallidior luteo tinctus plumis singulis strigâ medianâ luteâ piceo-marginatâ extus irregulariter transversè*



*piceo fasciatis; fronte, genis, regionibus auricularibus plumisque ad rostri basin prominentibus pallide umbrinis medio luteo-notatis; rostro albo, pedibus plumbeis.*

Upper surface sap-green, with a verdigris tinge on the wings; each feather marked in the middle with yellow, which is margined on the sides with black, from which spring irregular transverse bands of the same colour; the outer webs of the greater wing-coverts, quills, secondaries and the entire tail, brownish buff, irregularly banded transversely with black; between every alternate set lemon-yellow; the inner webs of quills and secondaries black, more or less transversely banded with lemon-yellow. Under surface pale greenish yellow, tinged with lemon-yellow, more or less marked along the shaft with pale yellow, which is narrowly margined with brownish black; some of the feathers have transverse bands of the same colour.

The top of the head brownish black, margined outerly with sap-green, tinged in some places with verdigris, and marked in the middle with pale yellow; the front, cheeks, ear-coverts and the projecting feathers of the face pale umber, marked in the middle with yellowish white. Bill white; feet plumbeous black.

Length, 2 feet 4 inches; bill, 1 inch 8 lines; wings,  $11\frac{1}{2}$  inches; tail,  $9\frac{1}{4}$  inches; tarsi,  $1\frac{3}{4}$  inch.

May 11.—William Spence, Esq., F.R.S., in the Chair.

The following paper was communicated to the Meeting:—

ON THE GENERA OF THE FAMILY CHITONIDÆ. BY J. E. GRAY, ESQ., F.R.S., F.Z.S. ETC.

This family now contains so many species, offering such varied modifications of form and structure, that it becomes necessary to separate it into several genera, for the purpose of more accurately determining the species and showing their relations to each other.

Most authors have regarded the family as a single genus, and even M. De Blainville, who formed the family into a class under the name of *Polyplakiphora*, so regarded them. He forms of this class and his *Nematopodes* or Barnacles a subtype of the animal kingdom, which he called *Malentozoaria* or *Molluscarticulata*; but there is no sufficient character to separate the Chitons from the other Mollusca, and the *Nematopodes* are now known to be *Crustacea*, so that this division or subtype of the animal kingdom has been erased from the system by most succeeding authors.

Dr. Leach in his MSS. proposed to divide this family into genera, according to the form of the appendages which cover the upper surface of the mantle; and Risso, who was in constant correspondence with Dr. Leach, has in his work published two of Dr. Leach's genera. Mr. Guilding has formed some genera on the same principles in the Zoological Journal, and I have added two others in the Synopsis of the British Museum for 1841.

I may remark that these appendages of the mantle form exceeding good characters for the more minute division of the groups, but the



scales so gradually pass into spines or tubercles on the one side, and on the other they so gradually diminish in thickness to furfuraceous scales, which are easily deciduous that it is difficult to define when they are quite absent; therefore they do not afford characters of sufficient importance to use them as Leach, Risso and Guilding have done, for the primary divisions of the family.

Lamarck divided the family into two genera, *Chiton* and *Chitonellus*, but he left in the former genus several species which are more naturally allied to the latter.

M. De Blainville in 1825 published a monograph of the family, under the article 'OSCABRION' in the Dict. Sci. Nat. xxxvi., in which he introduced some new characters for the division of the species into sections. He observes: "Les organes sur lesquels nous appellerons successivement l'attention pour le distinction des espèces sont les suivants:—

"1. L'existence ou l'absence des paires de pinceau de soies disposés bien régulièrement de chaque côte du limbe, qu'il soit revêtu ou non d'écailles, d'épines, ou même de poils.

"2. La disposition des branches commençant plus ou moins en arrière et se terminant plus ou moins en avant.

"3. La forme de valves de la coquille, considérée spécialement dans l'existence plus ou moins marqué des aires latérales.

"4. La grandeur proportionnelle de ces valves et leur degré d'occlusion.

"5. La forme des lames d'insertion et le nombre de leur échancrures ou dents.

"6. Enfin la disposition des couleurs de la coquille."—*D. S. N.* xxxvi. 536.

Certainly this was a great improvement to what had been previously done, but unfortunately M. De Blainville appears to have had the opportunity of observing only a limited number of species, and has placed the others in the sections to which, from their external appearance, they appeared to belong, though on examination they have not the characters assigned to the division in which they were placed: thus *Chiton amiculatus*, p. 546, is said to have the front and hinder valves lobed and pectinated; *C. niger*, p. 541, the teeth of insertion pectinated; *C. echinatus*, p. 550, the anterior and posterior valve toothed; and *C. gigas*, the lobes not pectinated.

From repeated examination and comparison I am inclined to consider the following as the best characters for the distinction of the genera and species, arranged according to their permanence and importance:—

1. The presence or absence of the pores, furnished with a bundle of spicula on each side of the mantle.

2. The comparative length and position of the gills.

3. The form and modification of the plate of insertion of the valves, especially of the posterior valve.

4. The size and form of the exposed part of the valve, and the kind of sculpture on its surface.

5. The absence or presence of appendages on the mantle, and the



form, sculpture on the surface, disposition, and equality or inequality of size of these appendages.

6. The colour of the valves and appendages of the mantle.

It has been objected, that the character derived from the form of the plates of insertion can only be seen by the destruction of the specimens, as they are generally kept in the cabinets: this is not always the case, for they can generally be seen from the under-side or through the substance of the mantle; but when this is not the case, the form of the plates of insertion can be easily discovered by carefully paring away the under part of the mantle, so as to show part of the edge of the valve without any injury to the specimen. And it should be recollected too, that the separate valves are the only part of the molluscos animals which are usually kept in cabinets.

The number of lobes into which the edge of the margin of insertion is divided may be also easily seen by the porous lines which are to be observed on the inner surface of the valves, diverging from the apex to the margin, each of these lines going to the bottom of the notch which separates the lobes on the inner processes of insertion.

Various authors, as Spengler, Chemnitz, De Blainville, Sowerby, Barnes and Reeves, have described and figured many species of the genus.

#### SYNOPSIS OF THE GENERA.

1. *Mantle simple, without any pores or tuft of spines on the sides.*

A. *The plate of insertion of the anterior and posterior valve divided into several lobes, and of the central valves into two lobes.*

a. *The valves exposed, broad, with regular, equal, well-defined margin for insertion, divided into lobes more or less denticulated. The hinder valve with the apex superior, subcentral.*

1. CHITON. The posterior valve entire; margin covered with regularly-disposed imbricate scales.

2. TONICIA. Posterior valve entire; margin naked.

3. ACANTHOPLEURA. Posterior valve entire; margin spinose, spinulose or bristly.

4. SCHIZOCHITON. Posterior valve with a deep notch on its central hinder margin; mantle slit behind.

b. *The valves exposed, broad; the hinder valve with a slightly raised, smooth or slightly crenated plate of insertion (not divided into lobes on the sides), and with the apex subterminal.*

5. COREPHIUM. The hinder valve with a rather raised apex, and the plate of insertion crenulated, with one small central slit.

6. PLAXIPHORA. The hinder valve with a produced posterior apex, and the plate of insertion entire, smooth, rounded; valves thin; mantle with tufts of bristles.

7. ONITHOCHITON. The hinder valve with a produced terminal apex; plate of insertion entire, rounded; valves thick; mantle covered with spines, bristles, or chaff-like scales.

8. ENOPLOCHITON. The hinder valve with a produced terminal



apex; plate of insertion entire, rounded; valves thick; mantle covered with oblong, unequal, elongated, oblong scales.

B. *The plate of insertion of all the valves with only a single notch on each side. The valves more or less covered; the hinder valve with expanded plates of insertion (as in the central valves), with only a single notch on each side, and a concave sinuosity below.*

9. MOPALIA. Valves, exposed part broad, transverse; plates of insertion moderate; mantle spinulose; front edge sometimes expanded.

10. KATHARINA. Valves, exposed part small, cordate, as long as broad; mantle smooth.

11. CRYPTOCHITON. Valves entirely hidden; mantle covered with tufts of spicula.

II. *Mantle with a series of pores (each furnished with a tuft of spines) on each side. The plates of insertion of all the valves with only a single notch on each side, which is sometimes rudimentary.*

12. CRYPTOCONCHUS. Exposed part of valves very small, linear, much longer than broad; mantle smooth.

13. AMICULA. Exposed part of valves small, subcordate, as broad as long; mantle bristly.

14. ACANTHOCHITES. Exposed part of valves moderate, broad, cordate, as long as broad; mantle spinulose.

15. CHITONELLUS. Exposed part of valves linear-lanceolate, elongate; body vermiform; mantle spinulose.

## MISCELLANEOUS.

*Researches to determine the Number of Species and the Mode of Development of the British Triton.* By J. HIGGINBOTTOM, Esq., F.R.C.S.

The observations of the author, of which he gives a detailed account in the present memoir, have led him to the following conclusions:—

Two species only of the genus *Triton* are met with in England; namely, the *Triton verrucosus* and the *Lisso-triton punctatus*. It is three years before the animal is capable of propagating its species, and four years before it attains its full growth. In its tadpole state, it remains in the water till its legs acquire sufficient strength to qualify it for progressive motion on land. While a land animal, it is in an active state during the summer, and passes the winter in a state of hybernation; but does not then, as has been erroneously supposed, remain at the bottom of pools. Very dry, or very wet situations are incompatible with the preservation of life during the period of hybernation. At the expiration of the third year, the triton revisits the water, in the spring season, for the purposes of reproduction, and again leaves it at the commencement of autumn.





1857. "Zoological Society." *The Annals and magazine of natural history; zoology, botany, and geology* 20, 57–70. <https://doi.org/10.1080/00222935709487875>.

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