

February 24, 1846.

George Gulliver, Esq., F.R.S., in the Chair.

The following Note on the Spermatozoa of the Polar Bear, by George Gulliver, Esq., F.R.S., was read :—

The question of the true nature of these curious bodies is as interesting as it is obscure. Whether they be independent animalcules or merely free and floating cilia has never been clearly proved.

Professor Valentin\*, indeed, described an amount of organization in the spermatozoa of a Bear, quite sufficient, if confirmed, to prove that they are really distinct beings. Therefore I took an opportunity of obtaining them for examination from the Polar Bear which died this morning in the Society's menagerie. The animal was a very large adult, in good condition; his testes well-developed, containing in the seminal tubes plenty of cells and immature spermatozoa, and an abundance of them perfectly formed in the vas deferens. These were carefully examined. They presented none of the marks of mouth, anus and internal vesicles depicted by Professor Valentin. In short, the spermatozoa of the Polar Bear were similar in all respects to those of numerous other Mammalia, as may be seen by comparing my drawings, now exhibited to the Society, of the spermatozoa of the following animals, viz. the Polar Bear (*Ursus maritimus*, Linn.), the Stoat (*Mustela Erminea*, Linn.), the Indian Badger (*Arctonyx collaris*, F. Cuv.), the Dromedary (*Camelus Dromedarius*, Linn.), and the Camel (*Camelus Bactrianus*, Auct.). I gave a notice of the spermatozoa of the two last animals in the Proc. of this Society, July 26, 1842, p. 101, and April 11, 1843, p. 50.

A paper by Edward Fry was then read :—

“On the Osteology of the Active Gibbon (*Hylobates agilis*).”

I have never met with any detailed account of the osteology of any species of the genus *Hylobates*. Professor Owen's memoir on that of the Orang Utan and Chimpanzee seems to make one desirable, for the sake of comparison, as the Gibbons are the next group of *Simiada* to the Orangs. Their skeleton too is highly interesting, as exhibiting a striking adaptation to progression amongst the branches of trees, well-fitting the animal to be a walker amongst woods, a *Hylobates*.

The individual, whose skeleton I am about to describe, was a female, which lived for some years in the Zoological Gardens at Bristol, having been brought thither from Macao, where she had been kept in confinement. Of two young ones which were taken with their mother in the forests of Malacca, she alone attained maturity. She was pro-

\* Wagner's Physiology, tr. by Dr. Willis, p. 228; 8vo. Lond. 1844.

bably nine or ten years of age at the time of her death. Of her agility and her cry I shall say nothing; much has already been written on these subjects, and no account of mine could give any adequate impression of her wonderful manners.

This individual is the one which was exhibited in London in 1840, and of which mention is made in Martin's 'Natural History of Quadrupeds,' Part 8.

#### Section I.—OF THE SKULL.

The cranium of the *Hylobates agilis* is elongate and ovate in form, much-contracted behind the orbits, which are very projecting and deep and surmounted by very elevated supraciliary ridges. The muzzle is rounded and broad, so that the face, although considerably prominent, has not attained the lengthened shape of the Baboons or of the adult Orang Utan. The forehead, which is narrow, is but slightly arched above the orbits, so that the whole of the cranium is behind the face.

A slightly elevated ridge of bone, arising from the supraorbital ridges, which becomes contracted during its passage over the coronal aspect of the skull, and again expands towards the occiput, marks the boundary on either side of the temporal muscles. This elevated medial portion is smooth, whilst the lateral portions of the skull are roughened by muscular attachments. This development is similar to that of the Chimpanzee, whilst in the Orang Utan the sagittal and temporal crests are elevated to an extraordinary extent.

The supraorbital ridges, we have before remarked, are much-developed. Such is the case in the Chimpanzee, where however they form a junction across the face, which does not take place in the Active Gibbon. The orbits have a very prominent margin, are very large and deep, and are much swelled out externally, so that their outer portion "projects very boldly from the cranium." Sir Thomas Stamford Raffles says of the Siamang, "The orbits of the eyes are circular and remarkably prominent," Linn. Trans. vol. xiii. p. 242. Such too is the character of the skull of the adult Hoolock figured by Dr. Harlan in the Transactions of the American Philosophical Society, vol. iv. New Series, p. 52.

The nasal bones make a slight elevation, thus resembling Man more than the Orang Utan or even the Chimpanzee. The osseous opening of the nose is wide and rather large. The figure of the face viewed in front, from between the orbits to the dental edge, resembles a wedge whose point is directed downwards. This form is contrary to that of the Baboons, where the wedge is inverted. The infraorbital canal opens by a single hole, as in Man and the Chimpanzee. This foramen is smaller in the Gibbon than in those animals.

The outward curvature of the zygomatic arch is not great; it is placed far more posteriorly than in Man, in consequence of the lengthening of the facial portion of the skull.

The skull of this Gibbon is anchylosed, externally at least, into one piece. Prof. Owen tells us that the cranial sutures are obliterated in the adult Orang Utan, Syndactylous Ape, and frequently

in the Baboons and other Quadrumana. I have observed it in *Pithecia Satanas*, an American species. It sometimes occurs in the adult human cranium.

The lower jaw is rather lengthened in figure, decidedly more so than in Man, in consequence of the production of the muzzle. It is shallowest just below the termination of the molar series, deepening towards the symphysis, which is not very retreating, so that the Gibbon has a pretty good chin for a monkey. In this respect it appears to approach Man more nearly than the higher Orangs. The lower jaw of Man is more uniform in its depth than that of this Gibbon: its angle too is not quite so much rounded; the external edges of the ascending and horizontal branches do not form quite so obtuse an angle at their meeting.

The question may be asked, What are the effects of age in altering the form of the skull in the Gibbons? In answer I will remark, first, that the muzzle is elongated and the cranium thrown in a more backward position, in consequence of the necessity for lengthening the dental edge to receive the second or permanent series of teeth. This will be evident by a comparison of the skulls of the young White-cheeked and Hoolock Gibbons, figured in Martin's Nat. Hist. Quad., Part 8, with that of the adult Agile Gibbon in the Bristol Institution (the subject of this paper) and with Dr. Harlan's plate of that of the adult Hoolock, Trans. Amer. Phil. Soc., *ubi supra*. The latter comparison is very satisfactory on this point, as the specimens compared are of the same species. A corresponding elongation of the facial parts takes place in the Orangs, as demonstrated by Prof. Owen, Zool. Trans. vol. i. or Zool. Proc. 1835, p. 30. A similar change is also observable in the human species; the facial angle of the infant decreases with age until the second teeth are cut. Secondly, with increasing age another change takes place in the greater prominence of the supraciliary ridges and the margin of the orbit. I appeal again to the illustrations of Martin and Harlan, and to the original sketch of the Agile Gibbon. A similar development of the cranial ridges takes place in the Orang Utan and Chimpanzee with age; in the former, in the temporal and sagittal crests; in the latter, in the orbital margin. Thirdly, in the ankylosis of the bones of the cranium and the face. This would appear to have taken place in the skull of the Hoolock figured by the late Dr. Richard Harlan (*ubi supra*), whilst in the immature one figured by Martin (*ubi supra*) the sutures are represented. This change is observed to take place in the adult Orang, but not in the Chimpanzee. Fourthly, it appears probable, from a comparison of the before-mentioned materials, that the infra-orbital foramen, and the foramen which gives exit to the dental blood-vessel and nerve in the lower jaw, become smaller by age.

From these observations it will be apparent that the skull of the Gibbons, like that of the Orangs, is far more anthropoid in youth than in mature age. The prolongation of the muzzle, the retrogression of the cranium, the smallness of the facial angle, the development of the orbital ridges, the ankylosis of the bones, and the small-

ness of the foramina, all distance the aged more than the immature Gibbon from the human race.

Compared with the human skull, the head of this Gibbon is distinguished by its lengthened ovate figure; its narrowness, especially behind the orbits; by the large size and inflated parietes of the orbits; by the want of vertical elevation of the forehead, and the consequent position of the brain behind, not above the face; by the great elevation of the supraorbital ridges; by the development of the muzzle, necessitating the backward position of the zygomatic arches and the elongation of the palate; by the small proportional size of the infraorbital foramen; by the obliquity of the occipital plane, and by the large size of the canine teeth; by the elongation of the lower jaws, in consequence of the length of the muzzle and palate; by the increased depth of the symphysis, and by the small size of the foramen which gives exit to the blood-vessel nourishing the teeth and the accompanying nerve.

This skull agrees with that of the Chimpanzee in its smallness proportionally to the body, in its generally elongated form, in its anterior contraction, in the marks of the attachments of the temporal muscles, in the large supraorbital ridges, in the obliquity of the plane of the foramen magnum, and in the slight arch of the nasal bones.

It differs from that of the Chimpanzee in the supraorbital ridges not uniting, in the obliteration of the sutures, in the smaller size of the infraorbital foramen and of the foramen of the dental blood-vessel. The lower jaw is proportionally shallower. The cranium of the young Chimpanzee is far broader, more arched and less anteriorly compressed, and therefore far more anthropoid. These characters however degenerate with age.

It differs yet more from the form of skull exhibited by the adult Orang Utan, where the strongly developed cranial ridges and widely expanded zygomatic arches give the skull a carnivorous aspect. These peculiarities we have seen to be absent in the Gibbon. The flatness of the bones of the nose of this Ape is an additional distinction. On the other hand, it agrees with the Orang in the obliteration of the cranial sutures of the adult.

In the large development of the supraciliary ridges this skull reminds us of the Baboons, which present however a more degraded form, and may be distinguished by the greater narrowness of the cranium, by the less circular form of the orbits, by the greater prolongation of the muzzle and the greater space between the zygomatic arch and the skull.

The dentition of the Gibbon claims no especial notice; the incisors and molars are moderate in size, whilst the canines are large, their roots apparently reaching nearly to the internal corner of the orbits.

#### Section II.—OF THE TRUNK.

The vertebral formula of the Agile Gibbon is—cervical, 7; dorsal, 13; lumbar, 5; sacral, 4; coccygeal, 4. The comparison of these

numbers with those of some of its congeners and near allies will be exhibited by the following table :—

Name of Animal.	Cervical.	Dorsal.	Lumbar.	Sacral.	Coccygeal.	Total.
Man .....	7	12	5	5	4	33
Chimpanzee .....	7	13	4	5	4	33
Orang Utan .....	7	12	4	5	3	31
<i>Hylobates concolor</i> ..	7	14	5	5	5	36
<i>Hylobates lar</i> .....	7	12	6	3	3	31
<i>Hylobates agilis</i> ...	7	13	5	4	4	33

Of the cervical vertebræ I need only remark, that the transverse processes of the atlas are produced long and narrow, more so than in Man. The first dorsal vertebra is the smallest, after which they gradually increase in size. The transverse processes of the lumbar vertebræ are less developed than in Man, and are more uniform in size. It will be noticed that whilst the lumbar vertebræ of the Chimpanzee and Orang Utan are four, two of the Gibbons have five and one has six; in the extent of this region therefore they approach Man. The sacral vertebræ are perfectly ankylosed together, but not to the coccygeal, and form about their middle an angle, the lower part being curved backwards. The upper portion thus remains in a line with the vertebral column, and part only is thrown backwards instead of the whole, as in Man. The first pair of foramina are almost obliterated, and are therefore not so large as in Man and the Chimpanzee; the three following are persistent. As in the Orangs, the sacrum is narrower than in the human skeleton. The weakness of these parts indicates the less amount of capability of assuming the erect posture than is granted to Man. The Gibbons are especially fitted for arboreal progression; and although by the assistance of their lengthened fore extremities, touching the ground on either side, and as it were acting as crutches, they are perhaps more at home in the erect posture on level surfaces than either the Chimpanzee or Orang Utan, yet their movements are awkward and constrained. The Gibbons are the only Mammals which can assume the erect posture whilst they walk on all four extremities.

The thorax, which is formed by seven true and six false ribs, is larger and more conical in form than in Man. The great activity of the Gibbons requires large respiratory organs; hence we find the thorax proportionally large (see Prof. Owen on Orangs, *ubi supra*); at the same time it affords increased attachments to the strong pectoral muscles required by the lengthened arms. One contrivance thus answers two ends.

The last three ribs are unattached by cartilage to the sternum, which consists of five pieces, whereof the last is free. In the number of its component pieces the sternum of the Active Gibbon agrees with Man and the Chimpanzee, and differs from the Orang Utan, where it is formed of seven or eight small pieces arranged in a double row. The manubrium differs slightly from the human in being proportionally broader.

Compared with the ribs of the Chimpanzee, those of the Active Gibbon are slight in form: compared with those of a Baboon, they are strong.

A reference to the dorsal column of the table of vertebræ given above will show that the number of ribs varies considerably in the genus *Hylobates*.

### Section III.—OF THE FORE EXTREMITIES.

The clavicles, which from their great length throw the scapulæ far backwards, and give great breadth to the shoulders, are flattened horizontally, have but little marks of tendinous attachment, and present neither the double curvature of Man nor the straightness of the Orang Utan, but a simple gentle curvature outwards.

The scapulæ are of a more lengthened shape than in the human subject, from which they also differ in having the aspect of the glenoid cavity far less laterally and more upwardly directed, in the upper edge of the bone rather descending than ascending from this cavity, in the convexity instead of concavity of the humeral edge, and the far greater acuteness of the inferior angle.

The peculiarities to be remarked in the humerus are its extraordinary length, reaching to just above the head of the femur, its slowness of form, and the general weakness of its elevations. The tubercles at the superior head are very small. Its twist occurs about one-third from the upper extremity of the bone, as in Man. The external apophysis can scarcely be said to exist; the internal is present.

The fore-arm is remarkable for its length (which is yet more extraordinary than that of the arm), for the slenderness of its form, and for the extent of the interosseous space formed by the great outward curvature of the radius: by this last character the Gibbon is distanced from Man, but approximated to the Orangs. The greatest distance of the radius from the ulna occurs about one-third of the length of the fore-arm from the superior articulation; not near the inferior head, as in the human skeleton. The olecranon of the ulna appears neither so broad nor so strong as in Man.

In this specimen the fore-arm is two inches longer than the arm. In the adult Hoolock the difference is about  $1\frac{1}{2}$  inch; in the *Hylobates concolor* about  $2\frac{1}{2}$  inches. These proportions correspond with those of the Orangs, but are at variance with the human, where the arm is about two inches longer than the fore-arm. Now it is remarkable that in the immature Gibbons the proportion of these parts has been found to resemble the human (see Dr. Harlan, *ubi supra*). Not only then are the skulls of these monkeys more anthropoid in youth than maturity, but likewise the proportions of the anterior extremities. Retrogression with advancing age from a superior to an inferior type of organization is not so common in nature as the converse.

The carpus of the Agile Gibbon appears to contain the same eight bones as in Man; not eleven, as Daubenton states that the *Hylobates*

lar possesses (Martin, *ubi supra*). The whole hand is remarkable for its slenderness and length, by which it is beautifully adapted for grasping the boughs of trees or any such objects: the fingers maintain similar proportions, one to another, to those of Man. The thumb, longer than in the Chimpanzee, where it does not quite equal in length the metacarpal bone of the first finger, is slender in form.

So extraordinary is the length of the fore extremity, that the humerus reaches to nearly the same part of the trunk as the wrist in Man, and that the fingers really rest on the ground when the animal assumes the erect posture. The length of the fore-arm of this skeleton, whose total height is only about two feet, positively exceeds in length that of the adult human subject, being eleven inches long.

Never have I seen a skeleton which better illustrates the law of animal mechanics, that rapidity of movement depends on the elongation of the short arm of the lever (which every bone represents) in proportion to the long arm of the same; or (otherwise expressed) on the extent of the distance between the fulcrum and weight in proportion to the distance between the fulcrum and the power.

As respects the proportions of the fore-limbs, the Orang Utan approaches the Gibbons, and retrogresses from Man more than the Chimpanzee, since in the former the arms reach to the heel, in the latter to about the knee-joint.

#### Section IV.—OF THE HIND EXTREMITIES.

The pelvis presents us with a type far degraded from the Bimanous. The hips are narrow; the iliac bones long and flat, and their superior margins do not present an arc of a circle, as in Man, and indeed to a certain extent in the Chimpanzee. The ischiatic bones, instead of retreating far backward from the symphysis of the pubes, are nearly on a plane with the iliac wings; their inferior margins are not circular, as in Man, but present three sides of a lengthened parallelogram. The symphysis of the pubic bones resembles that of Man more than does that of the young Chimpanzee.

The bones of the lower extremities are characterized, as those of the pectoral limbs, by the slenderness of their form and the slightness of their elevations.

The trochanters of the femur are small; the *linea aspera* absent. The ligamentum teres appears to have been present, thus agreeing with Man and all the *Simiadae*, excepting the Orang Utan.

The tibia and fibula have rather a larger interosseous space than in Man, consequent on the bowing of the fibula. This space is large in the Orang Utan (Owen, *ubi supra*).

The relative proportions of the leg and fore-leg are similar to the human.

Let me here introduce a remark made on this animal by Yarrell, viz. that both the upper and lower extremities are incapable of the same extension as in Man, owing to the strong facial expansion of the flexor tendons passing before the elbows and behind the knee-joints to be attached to the upper halves of their respective bones

below these parts (Notes on Dissection of Active Gibbon, Zoological Journal, vol. v. p. 14).

The foot is remarkable for the smallness of the os calcis, a character common to the Orangs and the lower Monkeys, and which, giving less basal surface to the foot, indicates less power of supporting the frame in the erect posture. The hind-foot is formed for grasping the branches of trees and not for walking on the ground. The metatarsal bones decrease in strength (as in the hand) from the first towards the little finger. The thumb is strongly formed, especially its metatarsal bone. The ungual phalanges are wanting in the second and third finger, and the ungual and penultimate in the little finger of the only hind extremity mounted on the skeleton. These defects in the hind-foot arise from the animal having been affected some time previous to her death with a morbid state of constitution (supposed to arise from confinement), which caused her to gnaw off the ends of some of her fingers. The foot is thrown less on the external edge than in the lower *Quadrumana*.

I am fully conscious of the imperfection of this account of the osteology of the Active Gibbon, yet trust that I have called attention to some points in which the organization of the skeleton is beautifully adapted to the habits of the creature. No part of the studies of a naturalist is more interesting or instructive than thus to trace, however imperfectly, the hand of an all-wise Creator in the works of nature.

EDW. FRY.

The next paper contained "Descriptions of eleven new species of Australian Birds," by John Gould, Esq. :—

*ATHENE MARMORATA.* *Ath. omni superiore corpore, alis, caudæque, saturatè fuscis, nuchæ autem, alarum tectricibus, et scapularibus, obscurè albo maculatis; pogoniis internis primariorum ad basin et rectricum lateralium fasciis stramineis, ad extremam pogoniam albicantibus, ornatis; facie et mento albidis; corpore inferiore saturatè fusco, albo et arenaceo colore maculato.*

All the upper surface, wings and tail dark brown, obscurely spotted with white round the back of the neck, on the wing-coverts and scapularies; inner webs of the primaries at their base, and the inner webs of the lateral tail-feathers crossed by bands, which are buff next the shaft and white towards the extremity of the webs; face and chin whitish; under surface dark brown, blotched with white and sandy brown; legs and thighs fawn-colour; bill horn-colour; feet yellow.

Total length, 14 inches; bill,  $1\frac{1}{8}$ ; wing,  $9\frac{1}{2}$ ; tail, 6; tarsi, 2.

*Hab.* South Australia.

*Remark.*—Nearly allied to *Athene maculata*, but much exceeding that species in size.

*ATHENE RUFA.* *Ath. disco faciali saturatè fusco; omni corpore, suprâ saturatè fusco, infrâ arenaceo-rufo, multis autem lineis rufo-fuscis transversim fasciato.*

Facial disc dark brown; all the upper surface dark brown, crossed by numerous narrow bars of reddish brown, the tints becoming paler



and the barrings larger and more distinct on the lower part of the body, wings and tail; all the under surface sandy red, crossed by numerous bars of reddish brown; the feathers of the throat with a line of brown down the centre; vent, legs and thighs of a paler tint, with the bars more numerous, but not so decided; bill horn-colour; toes yellowish, slightly clothed with feathers.

Total length, 20 inches; bill,  $1\frac{3}{4}$ ; wing,  $13\frac{1}{2}$ ; tail,  $9\frac{1}{2}$ ; tarsi,  $2\frac{1}{4}$ .

*Hab.* Port Essington.

*Remark.*—A very powerful species, nearly allied to *Athene strenua*.

**ALCYONE PULCHRA.** *Alc. omni corpore superiore splendide purpurascens-cyaneo; alis fusco-nigris; loris, cristula post aurem, et gula, stramineis; lateribus pectoris purpurascens-cyaneis, in vini colorem ad latera mercentibus.*

All the upper surface shining purplish blue; wings brownish black; lores, tuft behind the ear and throat buff; under surface deep ferruginous orange; sides of the chest fine purplish blue, passing into a rich vinous tint on the flanks; irides and bill black; feet orange.

Total length, 6 inches; bill, 2; wing,  $2\frac{3}{8}$ ; tail,  $1\frac{1}{2}$ ; tarsi,  $\frac{3}{8}$ .

*Hab.* Port Essington.

*Remark.*—This is by far the finest of the Australian Alcyones, and is at once distinguished by the rich blue of the upper surface and the beautiful vinous colouring of the flanks.

**ALCYON DIEMENENSIS.** *Alc. omni superiore corpore intense cyaneo, ad uropygium et tectrices caudae superiores splendidius; alis nigris cyaneo lavatis; gula straminea; vertice nigro indistincte fasciato.*

All the upper surface deep blue, becoming more vivid on the rump and upper tail-coverts; wings black, washed with blue; throat buff; under surface of the body and wings ferruginous orange; on each side of the chest a patch of bluish black; lores and a small patch behind the ears buff; crown of the head indistinctly barred with black; irides and bill black; feet orange.

Total length,  $6\frac{1}{2}$  inches; bill, 2; wing,  $3\frac{1}{8}$ ; tail,  $1\frac{3}{4}$ ; tarsi,  $\frac{1}{2}$ .

*Hab.* Van Diemen's Land.

*Remark.*—Rather more robust than *Alcyone azurea* or *A. pulchra*, and differing from both in the blue of the upper surface, which is less brilliant and of a slight greenish tinge.

**EÖPSALTRIA LEUCOGASTER.** *Eöps. parvo maculo triangulari ante oculum nigro; vertice, corpore superiore, alis caudaque, saturatè griseis; corpore inferiore albo.*

Immediately before the eye a small triangular-shaped spot of black; above the eye a faint line of greyish white; crown of the head, all the upper surface, wings and tail dark slate-grey; the lateral tail-feathers largely tipped with white on their inner webs; all the under surface white; irides dark brown; bill and feet black.

Total length,  $5\frac{3}{4}$  inches; bill,  $1\frac{1}{8}$ ; wing, 3; tail,  $2\frac{3}{4}$ ; tarsi,  $\frac{7}{8}$ .

*Hab.* Western Australia.

The sexes are alike in plumage.

**STREPERA ARGUTA.** *Strep. toto corpore nigro; remigum apicibus*

*fuscis ; crisso, et pogoniis internis primariorum secundariorumque ad basin et tertiæ partis apicalis rectricum albis.*

All the plumage black, becoming browner on the tips of the wing-feathers ; base of the inner webs of the primaries and secondaries, the under tail-coverts and the apical third of the inner webs of the tail-feathers white ; irides yellow ; bill and feet black.

Total length, 21 inches ; bill, 2 ; wing,  $11\frac{3}{4}$  ; tail, 10 ; tarsi,  $2\frac{3}{4}$ .

*Hab.* Van Diemen's Land.

*Remark.*—This is the largest species of the genus I have yet seen.

**STREPERA PLUMBEA.** *Strep. corpore superiore plumbeo-griseo, ad frontem loresque multo saturatius ; alis nigris ; secundariorum marginibus griseis, apicibus, et crisso, albis.*

All the upper surface leaden-grey, becoming much darker on the forehead and lores ; wings black ; secondaries margined with grey and tipped with white ; basal half of the inner webs of the primaries white, of the outer webs grey ; the remainder of their length black, slightly tipped with white ; tail black, margined with grey and largely tipped with white ; all the under surface greyish-brown ; under tail-coverts white ; irides, bill and feet black.

Total length, 18 inches ; bill,  $2\frac{3}{4}$  ; wing,  $11\frac{1}{2}$  ; tail, 9 ; tarsi,  $2\frac{1}{2}$ .

*Hab.* Western Australia.

**STREPERA MELANOPTERA.** *Strep. corpore superiore caudæque nigris ; corpore inferiore fusco-nigro, abdomine griseo tincto ; crisso rectricibusque, duabus intermediis exceptis, albis.*

All the upper surface, wings and tail black ; under surface brownish-black, tinged with grey on the abdomen ; under tail-coverts and tips of all but the two centre tail-feathers white ; irides yellow ; bill and feet black.

Total length, 19 inches ; bill, 2 ; wing, 11 ; tail, 9 ; tarsi,  $2\frac{2}{3}$ .

*Hab.* South Australia.

*Remark.*—Distinguished from all other species by the total absence of any white mark on the wings.

**GALLINULA TENEBROSA.** *Gal. griseo-nigra ; dorso scapularibusque nigris ; crisso medio nigro ad latera albo.*

General plumage greyish-black, with the exception of the back and scapularies, which are deep brown, and the primaries and tail, which are nearly pure black ; under tail-coverts black in the centre and pure white on the sides ; frontal plate orange ; base of the bill blood-red ; tip greenish yellow ; above the knee a garter of yellow and scarlet ; joints of the legs and feet green ; under surface of the legs and feet olive ; the sides of the tarsi and frontal plates of the toes yellow ; frontal plates of the tarsi yellow ; those nearest the knee stained with scarlet ; irides olive.

Total length, 15 inches ; bill,  $1\frac{1}{4}$  ; wing, 8 ; tail, 3 ; tarsi,  $2\frac{1}{2}$ .

*Hab.* South Australia.

*Remark.*—The above is the description of a female ; the male is supposed to be larger in size, and to differ in being of a paler hue beneath, and in having the whole of the upper surface brown.

SYLOCHELIDON STRENUUS. *Syl. fronte vertice et nucha nitide nigris ; dorso alis caudaque pallide cinereo-griseis ; reliquis plumis albis.*

Forehead, crown and nape deep glossy black ; back, wings and tail pale ashy grey, becoming lighter on the tail and deepening into dark grey on the primaries, the shafts of which are white ; remainder of the plumage pure white ; irides black ; bill scarlet, stained with yellow on the sides and tip, and with greenish yellow near the extremity.

Total length,  $20\frac{1}{2}$  inches ; bill, 4 ; wing,  $16\frac{1}{2}$  ; tail,  $6\frac{1}{2}$  ; tarsi, 2.

*Hab.* Southern coasts of Australia.

*Remark.*—The above is the description of the plumage of the breeding season ; at other times the head instead of being wholly black is mottled with black and white.

SULA PERSONATA. *Sul. alba ; tectricibus alarum majoribus, secundariis, tertialibus, rectricibus lateralibus, et rectricum intermediarum apicibus, intense fuscis.*

The whole of the plumage pure white, with the exception of the greater wing-coverts, primaries, secondaries, tertiaries, the tips of the two central and the whole of the lateral tail-feathers, which are of a rich chocolate-brown ; irides yellow ; naked skin of the face and chin in dead specimen dull bluish black ; legs greenish blue.

Total length, 29 inches ; bill, 5 ; wing,  $16\frac{1}{2}$  ; tail,  $8\frac{1}{2}$  ; tarsi,  $2\frac{1}{2}$ .

*Hab.* North and north-east coasts of Australia.

*Remark.*—A very robust and powerful species.