



J. Smith lith.

M&N Hanhart imp.

PELECANUS MOLINÆ

†27. GLAREOLA PRATINCOLA.

Glareola pratincola (Linn.); Hartl. Orn. Westafr. p. 210.

"No. 15. Ambriz, November 26, 1868, Large numbers flying high in the air, with a flight between that of a Swallow and a Sand-piper. Gizzard and stomach full of flies and other winged insects. Only seen for one day. Eyes dark slate-colour."—J. J. M.

The specimen sent is a young bird, apparently *G. pratincola* and not *G. nordmanni*. Most of the under wing-coverts are rufous, but some of them, especially near the edge of the wing, are quite black, while others are decidedly getting black. In case, however, I may be mistaken, I think it best to give a description of the specimen in detail.

Above dark brown, deepest on the head and scapularies, the whole upper plumage mottled with pale brown edgings to the feathers; eyebrow pale brown; primary coverts and quills dark brown, the secondaries tipped with rufous-white; rump and upper tail-coverts pure white; tail deeply forked, white at the base and for the greater part of the feathers, the outer feathers brown towards the tip; chin and throat pale yellowish brown, the latter longitudinally striped with dark brown; cheeks and ear-coverts greyish brown, the latter paler, the former broadly striped with dark brown; breast pale ochreous brown, the upper portion and the sides of the neck mottled with dark brown; abdomen and under tail-coverts pure white; under wing-coverts rufous, the feathers along the bend of the wing black, mottled with reddish brown, the edge of the wing white, and all the feathers along the radius partly black; bill and feet black, or nearly so.

†28. NUMENIUS MADAGASCARIENSIS.

Numenius madagascariensis, Briss.; Hartl. Faun. Madag. p. 77; Schl. & Poll. Faun. Mad. Ois. p. 133.

"Ambriz, December 1868."—J. J. M.

This Curlew seems to me to be a very good species, totally distinct from *N. arquatus* or its southern form *N. major*, Schl. Its occurrence in West Africa is here recorded for the first time.

29. ACTITIS HYPOLEUCOS.

"River Loge at Ambriz."—J. J. M.

7. A Monograph of the Genus *Pelecanus*.

By D. G. ELLIOT, F.L.S., F.Z.S., &c.

(Plate XLIV.)

This paper was written chiefly in Philadelphia, where my opportunities for investigating the species were most favourable; for in the magnificent collection of the Academy of Natural Sciences,

all the species, excepting *P. javanicus*, are represented by a large number of individuals of various ages. I have also examined the specimens in the collections of the British and Paris Museums, as well as the living birds in the Gardens of this Society and in those of the Jardin des Plantes and Jardin d'Acclimatation of Paris.

My conclusions are the result of patient investigation; yet I am fully aware that in some instances they may appear less satisfactory than might be desired; this, however, in some degree, arises from the lack of necessary specimens of the different ages of one or two species to enable me to clear up some still uncertain points.

If I shall succeed in drawing the attention of those whose opportunities are better than my own to study the changes of plumage of those species still involved in some obscurity, and thus extend our knowledge of these interesting birds, my paper will not have been written in vain.

Review of the Literature of the Genus.

As far within the dim past as history gives to us any record, the birds of this genus have been observed and mentioned; for we have good reason to suppose that the *P. onocrotalus*, the species most widely distributed and best known in the Old World to-day, was the "Pelican of the wilderness" of Biblical times.

All of the older authors mention the "Pelican," meaning to imply, probably, the common species just named above, although in many instances their descriptions could not be referred to that bird.

Commencing with Linnæus, the author of the binominal system now generally adopted, in the review of the literature of the genus, his great work claims first our attention.

The tenth edition of the 'Systema Naturæ,' being generally conceded to be the most complete, I have not deemed it advisable to refer to works prior to its date, notwithstanding that some excellent although, unfortunately, polynominalist authors flourished before the great Swede.

(1758.) Linnæus, 'Systema Naturæ.' The genus *Pelecanus*, established by Linnæus in 1735, here contains only one species, the *P. onocrotalus*, according to our author's ideas, although he adopts as synonymous the *O. fuscus* of Sloane, and the *O. americanus* of Edwards, both of which are distinct species of the New World. But thus far Linnæus's genus has but one species.

(1760.) Brisson, 'Ornithologie.' This author here establishes the genus *Onocrotalus*, with *P. onocrotalus* as his type, and cites the following as his species:—*O. albus* (*P. onocrotalus*); *O. mexicanus dentatus*, which is the *P. molinae* of Gray as it now stands; *O. fuscus*; and *O. philippensis*, which is *P. rufescens* as now determined,—four species in all, being quite a step in advance of Linnæus's list of two years previous. The descriptions given by Brisson are good, and the various species easily recognizable; but so much cannot be said of the plates.

(1785.) Pennant, 'Arctic Zoology.' This author gives no new

species, but makes a new synonym for the *P. fuscus*, in his "Charlestown Pelican," which is the "Brown Pelican" from that locality.

(1788.) Gmelin, 'Systema Naturæ.' In this work we find quite an extended list of species of this genus, without, however, rendering it necessary for us to accord our author any merit for original investigation, as it is simply Latham's list of a few years previous Latinized. The species are, *P. onocrotalus*, *roseus*, *fuscus*, *manillensis*, *philippensis*, *rufescens*, *carolinensis*, *erythrorhynchus*, and *thagus*. Of these, *P. rufescens* is a good species, *roseus*, *manillensis*, and *philippensis* being synonyms: *P. fuscus* is also good, with *carolinensis* as a synonym, this being the Charlestown Pelican of Pennant; while the American White Pelican is here first named *erythrorhynchus*, a misnomer. The *P. thagus* is *P. molinæ* of Gray. Species now five.

(1790.) Latham, 'Index Ornithologicus.' The list given by this author is the same as the preceding, except that the White Pelican of America is renamed *trachyrhynchus*, which is not admissible; for, although it may be more appropriate than Gmelin's appellation, yet the reason is not sufficient to justify the action, and should not be upheld by subsequent writers.

(1790.) Bonnaterre, 'Encyclopédie Méthodique, Ornithologie.' The species already given are included in this author's list, but no novelty afforded.

(1794.) Donndorf (Johann August), 'Zoologische Beiträge.' No new facts are recorded by the great synonymatist, while the errors previously made are repeated.

Between this date and the next, a period of nearly thirty years, nothing especial transpired in the literature of this genus.

(1822.) 'Transactions of the Linnean Society.' Dr. Horsfield describes *P. javanicus* from Java. Species six.

(1824.) Temminck, 'Planches Coloriées.' The *Pelicanus conspicillatus* is here described for the first time. Species seven.

(1826.) Stephens, in 'Shaw's General Zoology.' A list of eight species is given, more correct than those usually met with at this period. These are *P. onocrotalus*, *fuscus*, *rufescens*, *carolinensis*, *australis*, *javanicus*, *thagus*, and *trachyrhynchus*: *australis* is a synonym of *conspicillatus*, *carolinensis* of *fuscus*, and *thagus* of *molinæ*; the other four stand as at present good species, so considered.

(1826.) Rüppell, 'Reise im nördl. Africa, Zoologie.' Dr. Rüppell figures *P. rufescens*, up to the present time the only tolerable representation of the adult existing.

(1831.) Lesson, 'Traité d'Ornithologie.' A list by this author, only requiring notice here from his giving a new synonym to the *P. rufescens*, in his *P. cristatus*.

(1832.) Bruch, 'Isis,' p. 1109. *P. crispus* is here first described. Species eight.

(1832.) Wagler, 'Isis,' p. 1233. Our author institutes the genus *Onocrotalus* (oblivious of Brisson's genus of the same name) with

the *O. hernandezii* as the type—this, however, being a synonym of *P. thagus* of Molina, now accepted as *P. molinæ* of Gray. *P. rufescens* in this article is also renamed *phæospilus*. Species eight.

(1836.) Brandt, Joannes Fredericus, 'Descriptiones et Icones Animalium Rossicorum novorum.' The author gives in this pamphlet descriptions and copious synonymy of two species, *P. onocrotalus* and *P. crispus*, while *fuscus* is attributed to the West Indies, and *conspicillatus* to New Holland, and *onocrotalus*, *vel species valde affinis* to North America. A good description of the bony structure and internal anatomy of *onocrotalus* is added. A very valuable contribution.

(1837.) Rüppell, 'Museum Senckenbergianum,' p. 185. A new species is here described as *P. minor*. Species nine.

(1838.) Lichtenstein, 'Abhandlungen der Königl. Akademie der Wissenschaften zu Berlin.' In this valuable paper is contained the best monograph of this genus that had thus far been attempted. Seven species are given, namely, *onocrotalus*, *mitratus*, *crispus*, *rufescens*, *trachyrhynchus*, *fuscus*, and *conspicillatus*: *P. mitratus* is described as new, but is the *minor* of Rüppell given in the previous year, as above noted, while *philippensis* of Brisson and *manillensis* and *roseus* of Gmelin are considered the same as *rufescens*. A plate with representations of the heads, both in profile and front view, of six of the species is given, *conspicillatus* having been omitted. Altogether it is the most valuable paper on this genus thus far published.

(1849.) Gray and Mitchell, 'Genera of Birds.' The genus *Pelecanus* is here introduced as belonging to the second subfamily of the great family *Pelecanidæ*, which arrangement the present writer accepts only in part. The four generally considered families, *Pelecanidæ*, *Plotidæ*, *Tachypetidæ*, and *Phalacrocoracidæ*, would seem to be far more naturally arranged if brought together under the first named, and these divisions considered as subfamilies of the one family *Pelecanidæ*. The differences exhibited among the members of each group from those of the others are more of the kind properly considered generic than of those which constitute separate family divisions. All the species as now known are included in this excellent list, except the *P. javanicus* of Horsfield.

(1850.) Reichenbach, "Novitiæ ad 'Synopsis Avium.'" Eight species are here enumerated, *javanicus* and *molinæ* being omitted. Reduced figures are also given.

(1851.) Reichenbach, MS., as quoted by Bonaparte. Four genera are here instituted—*Catoptropelicanus*, type *P. conspicillatus*; *Onocrotalus*, type *P. crispus*; *Cyrtopelicanus*, type *P. erythrorhynchus*; and *Leptopelicanus*, type *P. fuscus*.

(1857.) Bonaparte, 'Conspectus Generum Avium.' In this monograph the various species are grouped in three genera. *Pelecanus*, Linn., comprises *conspicillatus*, *crispus*, *rufescens*, *philippensis*, and *onocrotalus*. *Catoptropelicanus*, Reich., is placed as a subgenus for *conspicillatus*, and *Onocrotalus* of the same author as a

subgenus for the remaining species; while *P. minor* of Rüppell is deemed a variety of *onocrotalus*, and *mitratus* of Lichtenstein a synonym of *rufescens*—this last a serious error, as the two may not even be included in the same group. This error, however, is repeated again by *javanicus* of Horsfield being given as a synonym of *philippensis*. The two species *mitratus* (or *minor*, as it should be called) and *javanicus* belong to that group which have the feathers of the forehead terminating in a long point at the base of the upper mandible, while in *rufescens* these form a concave line at the base of the culmen. This author appears to have arranged his synonymy without having examined the specimens, which is generally considered rather necessary when one is defining species.

The second genus is *Cyrtopelicanus*, Reich., including the single species *erythrorhynchus*—although Latham's name is here employed, and the synonymy is very much mixed up with that properly belonging to *molinae* of Gray; for although we may not exactly be able to determine what *thagus* of Molina is referable to, it is very certain that it does not belong to the White Pelican of North America. The remaining species, *fuscus* and *thagus* (Molina), are included in Wagler's genus *Onocrotalus*, Brisson's genus of the same name, established nearly one hundred years previous, being ignored. These genera are made to comprise the subfamily *Pelecaninae*, which, with *Sulinae*, constitutes his family *Pelecanidae*, tribe Totipalmi, of the order Gaviæ.

(1864.) Jerdon, 'Birds of India.' In this valuable work the species of Pelicans inhabiting India are given:—*P. onocrotalus*; *P. mitratus*, which is *minor*, Rüppell; *P. javanicus*, which, being described as possessing an occipital crest, which true *javanicus* never has, and also having the frontal feathers truncated and not pointed, would appear to be referable to *P. rufescens*; and, finally, *P. philippensis*, which is young *rufescens*.

(1867.) Blyth, in the 'Ibis.' In his commentary on Dr. Jerdon's 'Birds of India,' this author here reviews the Pelicans enumerated in that work. He refers *mitratus* to *onocrotalus* as identical, or only a race. The *P. onocrotalus* of Jerdon is mentioned as never having any occipital crest, nor any tumidity upon the forehead, which does not agree with *onocrotalus* of Europe, which, during the breeding-season, has both of these. *P. javanicus* is considered a race of *onocrotalus*; and a fourth race, a "similar diminutive of *P. mitratus*," is deemed to be the *Onocrotalus minor* of Rüppell. Of the *P. crispus* type, *P. rufescens* is acknowledged, and *philippensis* doubtfully separated from it.

(1868.) Selater, 'Proceedings of the Zoological Society.' A list of the known species is here given, with plates of two, *fuscus* and *rufescens*, juv.: *javanicus*, Jerdon, is referred to *mitratus*, Lichtenstein; and *onocrotalus*, Jerdon, to *javanicus*, Horsfield. An analytical table is appended at the end of the article. No synonymy is given, the article being intended more as a list of the species living in the gardens of the Society than as a monograph of the genus.

Characters of the Subfamily.

The Pelicans form a very strongly defined and well-marked group or division of the great family *Pelecanidæ*, which is distinguished from all others by its members possessing gular sacs, less extensive in the Cormorants and Gannets, but having their greatest development in the birds forming the genus now under consideration. Another peculiar characteristic of this family is, that its members have the four toes connected by a thin semitransparent skin; the hind toe, articulated to the inner side of the tarsus, pointing inwards, sometimes directed slightly forwards. Although so well provided for a life in the watery element, they nevertheless perch well upon the branches of trees, in many instances build their nests upon the limbs raised high above the water. The young are incapable of providing for themselves, and do not leave the nest for a long period after escaping from the shell.

The family *Pelecanidæ* is composed of six subfamilies, *Phætoninæ*, *Attageninæ*, *Plotinæ*, *Pelecaninæ*, *Sulinæ*, and *Graculinæ*, as it appears to the present writer. Gray comprises them in three, making *Pelecaninæ* to include *Sulinæ*, *Graculinæ*, and *Attageninæ*, while many writers make them all distinct families. These six subfamilies constitute the order Steganopodes. The members of this order occupy a very humble rank in the classification of birds, being only the second remove from the lowest, which comprises the Auks and their allies, some of which, in their wingless forms, or rather being incapable of flight, are but one step from the inhabitants of the deep. As a general rule the Peleicans are dwellers in warm countries, and are found mostly in those lying towards the equator; but there are exceptions to this, the *P. erythrorhynchus* of North America having been met with in great numbers in the fur-countries as high as 61° N. latitude, and the *P. onocrotalus* of Europe has penetrated into the colder regions of that continent. Pelicans are altrices, and do not generally lay more than two eggs, although three are sometimes found in the same nest. They are naturally arranged into two groups, according to the shape of the frontal feathers. One, of which we may consider *P. onocrotalus* as the type, has the feathers prolonged to a point, which divides the bare skin, and comes down nearly to the culmen; the other, of which *P. crispus* may be taken as the type, has the feathers coming down upon the forehead and forming a concave line upon the culmen. The first of these embraces, beside the typical species, *minor* and *javanicus*; the second contains *crispus*, *rufescens*, *conspicillatus*, *erythrorhynchus*, *fuscus*, and *molinæ*. All the species fly and walk well; one only dives or plunges.

Pelicans are the largest of the water-birds, some species exceeding the Swan in size, and when upon the wing have an alar extent nearly as great as any bird that flies. Their bodies are heavy; but they seem to be no impediment to the bird when desirous of ascending into the air, where they frequently amuse themselves sailing in wide circles for hours.

The general form is stout, heavy, and cumbersome, the apparently disproportioned bill and deep pendent gular sac giving to the bird an awkward, rather stupid appearance. The body is long, flattened beneath; the neck long and thick. Head rather small, oblong, rather flat on the top. The plumage is soft and downy upon the head and neck, excepting the feathers of the crest when this appendage is present; that of the upper parts is usually lanceolate, rather loose; of the breast and under parts thick and elastic, impervious to water.

The bill of the Pelican is of peculiar form, fitted to sustain the pouch which is suspended from it. It is long, rather slender, generally straight, and flattened. The upper mandible is convex at the base, more so in some species than in others, becoming flattened, spreads gradually, and reaches its widest part near the end, when it narrows rapidly and terminates in a nail, or hooked point. The ridge is convex at first and then follows the shape of the mandible, narrowing towards the tip. The nail is curved sharply, concave beneath, with the point acute. The crura of the lower mandible are separated, and only meet at the tip; to these, filling up the interspace which thus occupies the whole length of the bill, is appended the huge gular pouch, being a huge exaggeration of the membrane usually observed at the base of the under mandible in other species of birds. At the base, and extending for about one-half of the length of the bill, the lower mandible is wider than the upper, but contracts and fits into the upper mandible for the remainder of its length. Upon the ridge of the upper mandible, in one species, a bony crest is present in the males during the breeding-season, but does not remain after that period. The pouch is formed of skin, which is thin, filled with small blood-vessels, semitransparent, and capable of great distention. It extends in a greater or less degree down the throat, reaching its greatest development in *P. molinæ*.

The nostrils, although visible and open in the young, are hidden in the adults, in a groove which runs along the side of the ridge on the upper mandible. The bill is covered with an irregular, rough, somewhat scaly skin.

The wings are long, when folded reaching to about half the length of the tail; the second and third primaries usually the longest; the secondaries are incurved, long—sometimes, when the wing is closed, extending beyond the primaries. The feathers of the coverts are long and narrow, in some species lanceolate.

The tail is rather short, broad, and rounded, composed, in the different species, of various numbers of feathers, which are pointed. The coverts are long, both upper and under covering two-thirds of the length of the tail.

Thighs usually within the body; the tarsus rather short, in some species being two-thirds the length of the middle toe without the claw, in others about equal to it. It is covered with hexagonally shaped scutellæ, largest anteriorly. Feet rather small; toes on an equal plane, all connected by a web. Claws short, stout, curved, acute, concave beneath.

Family PELECANIDÆ.

Char.—Feet small. The four toes on a level, connected together by a more or less indented web.

Subfamily PELECANINÆ.

Size large; body heavy; head with or without occipital crest.

Genus PELECANUS.

Bill very long; sac extending the entire length; under mandible wider than the upper at the base. Upper mandible terminating in a sharp curved nail.

Analytical Table.

- | | |
|---|---|
| A. Bare loreal space extending to the mandibles. | |
| a'. Feathers on the forehead extending to a point on the culmen | $\left\{ \begin{array}{l} 1. P. onocrotalus. \\ 2. P. minor. \\ 3. P. javanicus. \\ 4. P. erythrorhynchus. \\ 5. P. crispus. \\ 6. P. rufescens. \\ 7. P. fuscus. \\ 8. P. molinæ. \end{array} \right.$ |
| b'. Lower mandible feathered at base | |
| c'. Feathers of the forehead forming a concave line at the base of the culmen. Mandibles free of feathers | |
| B. Bare loreal space separated from the bill by a row of feathers..... | |
| | 9. <i>P. australis.</i> |

Description of the Genera and Species.

Subfamily PELECANINÆ.

PELECANUS, Linnæus.

Pelecanus, Linn. Syst. Nat. p. 132 (1758) (auct.).

Onocrotalus, Briss. Ornithologie (1760), tom. vi. p. 519, type *P. onocrotalus*; Wagler nec Briss. Isis (1832), p. 1233, type *P. molinæ*.

Catoptropelicanus, Reich., type *P. conspicillatus*.

Onocrotalus, Reich., nec Briss. nec Wagl., type *P. crispus*.

Cyrtopelicanus, Reich. MS., type *P. erythrorhynchus*.

Leptopelicanus, Reich. MS., type *P. fuscus*.

Largest in size of all the birds of this family. Head long, oval, flattened. Neck long and thick. Wings long, secondaries exceeding the primaries when the wing is folded. Tail moderate, rounded. Tarsi short; toes long, webs broad, not indented. Bill very long; gular sac attached to the crura of the lower mandible for its entire length. Nostrils in adults hidden.

This genus, instituted by Linnæus at a much earlier date even than the one selected as a starting-point for this monograph, comprises various species of birds which cannot be confounded with any others known, and which, according to the views of the present writer, do not present any characters not common to all, which can be considered of sufficient importance to separate any of the number from the remainder into a different genus, as has been of late years

attempted. But one species of Pelican seems to have been known to Linnæus (the common *P. onocrotalus* of Europe) at the date of the tenth edition of his 'Systema Avium,' although two years later Brisson enumerates four. The various genera instituted by Reichenbach, as above quoted, do not seem to be founded upon sufficient reasons, the characters selected appertaining more to specific than generic distinctions.

PELECANUS ONOCROTALUS.

Pelecanus onocrotalus, Linn. Syst. Nat. vol. i. p. 132 (1758); Naum. Vög. Deutschl. t. 282. 1 (ad.), 2 (juv.); Bonnat. Encycl. Méthod. Ornith. (1790) p. 42; Lath. Syn. vol. iii. p. 578. sp. 1; *id.* Ind. Orn. ii. p. 882. sp. 1; Steph. Gen. Zool. xiii. p. 109, t. 12; Brehm, Vög. Deutsch. p. 824, t. 40. fig. 1; Roux, Orn. Prov. t. 342 (juv.); Reich. Syst. Av. pl. 36. figs. 376, 377; Gray, Gen. of Birds, iii. p. 668. sp. 1; Gmel. Syst. Nat. i. pt. 2 (1788), p. 569; Bree, Birds of Eur. vol. iv. p. 174; Temm. Man. d'Ornith. ii. p. 891; Jerd. B. of India, vol. iii. p. 854; Brandt, Icon. Animal. Rossic. Nov. (1836) p. 44. sp. 1; Schleg. Mus. Pays-Bas, 4^{me} livr. p. 30; Sclat. P. Z. S. (1868) p. 264; Licht. Abhandl. Akad. Wiss. Berl. (1838) p. 436, t. 3. fig. 1; Donnd. Zool. Beitr. vol. ii. pt. 1, 844; Gould, B. of Eur. vol. v. pl. 405?

Le Pélican, Buff. Plan. Enlum. 87, p. 169, tom. ix.

Pelecanus roseus, Eversm. in Script. Liter. Imp. Universit. Casanien. (1835) fascic. ii. p. 369.

Onocrotalus albus, Brisson, Ornith. (1760) p. 519, tom. vi.

Pelecanus javanicus, Blyth, Cat. B. Mus. Asiat. Soc. Beng. p. 297. n. 1740.

Occiput with a rather elongated crest during the breeding-season. Bare space around the eye diamond-shape behind, and reaching to the base of the upper mandible. Gular pouch extending for about six inches down the throat. Feathers of head form a distinct point upon the forehead. Upper mandible reddish at the base, becoming yellowish at the tip, with a line of crimson along the culmen; under mandible pale red. Pouch and bare space about the eye flesh-colour. Primaries and spurious wing black. Occipital crest and the elongated feathers at the lower part of the neck in front light yellow. Rest of plumage white, tinged with rose-colour. Tarsi flesh-colour. Tail of eighteen feathers. Length about 5 feet, wing 26 inches, tarsus $4\frac{1}{2}$ inches, upper mandible 16 inches.

Hab. Europe and northern part of Africa. Common in Hungary, Crimea, Egypt, and Ionian Islands. Accidental in France and Algeria. In West Africa, at Senegambia and Mozambique*. Also in Abyssinia.

The young during the first year are uniform greyish brown, the lanceolate feathers of the breast being entirely wanting. The perfect plumage is not acquired for some years; and the depth of the rosy tint is increased at the breeding-season.

* Ornithologie Westafrikas, p. 259 (Hartl.).

This is the common species of the Old World, and was known to the earliest writers on ornithology. It goes at times in great flocks, as witnessed by W. H. Simpson, who states, in the 'Ibis,' vol. iii. p. 366, that he once saw a flock of these birds, numbering several thousand individuals, flying northward in the Dobrudscha.

The female constructs her nest upon the ground, formed of reeds and lined with soft grass, and lays usually two white eggs. The present bird does not confine itself to the shores of the sea, but frequents inland lakes and rivers; feeds principally upon fish, and at the approach of winter migrates in immense flocks.

Very great confusion exists in the synonymy of this species, the difficulty in the majority of instances arising from the uncertainty as to whether there are two species—one with a lengthened occipital pendent crest, which would appear to be a smaller bird, and the other without any crest properly so-called, the feathers of the occiput merely curling slightly upward.

During the breeding-season, however, the present bird, the true *P. onocrotalus* of Linn., has a somewhat lengthened occipital crest, and at such times, in this respect, it does not differ materially from its smaller ally, this crest at other periods of the year being inconspicuous. But there is a slight difference in the width and extent of the line made by the feathers which come down upon the forehead. In the present species it ends abruptly with little lessening of the width, while in the smaller bird it is long and narrow, ending in almost a sharp point.

I have placed Mr. Gould's *P. onocrotalus*, in 'Birds of Europe,' with a ?, as, giving no dimensions in his text, and his figure not being life-size and showing the crest somewhat lengthened, it is rather difficult to say to which bird it should be referred. Dr. Jerdon thinks that Bree has figured the *P. mitratus* for the present species in his 'Birds of Europe;' but as Dr. Bree states that an example in the Zoological Society's Gardens in London was the original of his plate, it is probably the present species, as the *P. mitratus* was not in the Society's possession at that time. The *P. javanicus* of Blyth's 'Catalogue' of the Asiatic Society may perhaps be assigned to this species, as he refers it to Stephens's plate in Shaw's 'General Zoology,' which does not give any of the black margins of the tertiaries, one of the characteristics of the bird described by Horsfield.

PELECANUS MINOR.

Pelecanus minor, Rüpp. Vög. Nord-Ost-Afrika's (1845), tab. 49, p. 140; *id.* Mus. Sencken. Band ii. p. 185 (1837); Reich. Syst. Av. i. t. 37. figs. 2321, 2322.

P. mitratus, Licht. Abhandl. Akad. Wiss. Berl. (1838) 436, t. 3. f. 2; Reich. Syst. Av. vol. i. t. 38. figs. 879, 880?; Blyth, Ibis (1867), p. 178; Selat. P.Z.S. (1868), p. 266; Jerd. B. of Ind. vol. iii. p. 856.

P. onocrotalus, Bon. Consp. ii. p. 162; Layard, B. of South Africa; Blyth, Cat. Birds Mus. Asiat. Soc. Beng. p. 297. sp. 1740.

P. megalophus, Heugl. Vög. Nord-Ost-Afr. (1856) p. 72. no. 1750.

Occipital crest long and pendent, formed of narrow feathers. Frontal feathers fully as prolonged as in *P. onocrotalus*, forming a narrow line. General colour pure white. Occipital crest and patch on the breast yellowish. Spurious wing and primaries black. The gular pouch and bare space about the eye is almost precisely similar in shape to that of the preceding species, extending about the same distance down the throat. The bill is yellowish; nail red. Orbits and pouch flesh-colour; irides reddish.

Length about 55 inches; wing, from carpal joint, 24 inches; tail 7 inches; bill 12 inches; tarsus 5 inches.

Hab. Sicily and Greece, Egypt, Abyssinia, west coast of Africa, and India.

I have given to this bird, if it really must be considered distinct from the common species, Rüppell's name of *minor*, as his diagnosis and measurements appear to agree very accurately with specimens of *mitratus* before me, and his name antedates that of Lichtenstein. As I have already stated, in my article on *P. onocrotalus*, the only difference between them is in the smaller size, occipital crest, and rather narrower point of the frontal feathers of the present bird. It may, however, be doubted if these characters are sufficient to establish it as a separate species, and it may with more propriety be considered only a race. I have included among the synonyms the *P. onocrotalus* of Bonaparte, as his description of "*occipiti cristato plumis planis angustis*" appears to apply to this bird. The fact that Bonaparte's synonymy of some of the *Pelecanidæ* is very much confused, and that he has referred this bird to *P. rufescens*, which belongs to an entirely different group, that of which *P. crispus* is the type, shows that he did not make the necessary examinations of the specimens when writing his monograph, and that his conclusions cannot be taken solely upon the authority of his name. Layard, in his 'Birds of South Africa,' describes a *Pelecanus onocrotalus*, which he states to be widely distributed and associating in small flocks. His description would seem to point out the present bird rather than the species to which he has referred it, as he speaks of the presence on the breast of "a tuft of stiff bright straw-coloured feathers," and the "head crested," both of which peculiarities are claimed as appertaining to the present bird. His measurements also are less than generally found in *P. onocrotalus*; and moreover, having specimens before from the Cape of Good Hope which answer in every way to the *P. minor*, I have placed Mr. Layard's name among its synonyms.

The *Pelecanus mitratus* of Reichenbach, represented by two figures, does not exhibit any pendent crest, but a short recurved crest upon the occiput; and this would seem to refer his bird to *onocrotalus*. I have therefore placed a question (?) after the synonym.

PELECANUS JAVANICUS.

Pelecanus javanicus, Horsf. Linn. Trans. vol. xiii. p. 197. sp. 2; Sclat. P. Z. S. (1868) p. 268; Steph. Shaw's Gen. Zool. vol. xiii. p. 116 (1826).

P. onocrotalus, apud Jerdon, Blyth, Ibis (1867), p. 179.

I have never seen a specimen of this bird; and the type, which is now in the collection of the East-India Company, is not at present visible, on account of the birds being packed preparatory to their removal to another location; consequently I am not able to give an opinion upon its specific value.

It is distinguished from *P. onocrotalus*, according to its describer, by having the margins of the tertiaries black, and by never having any pendent occipital feathers; instead it has a few recurved feathers upon the nape. According to Blyth, as quoted from 'The Ibis,' the forehead is never tumid, the bare skin of the cheeks is deep purplish or livid carneous, and the pouch intense bright yellow.

Length, as given by Blyth, 5 feet 6 in.; alar extent 8 feet 10 in.; wing, from carpal joint, 26 in.; tail 8 in.; bill, along culmen, 14.5; tarsus 5.5 in. Another had the bill 15.5 in., wing 27 in.; in a third the bill was 16 inches in length.

PELECANUS CRISPUS.

Pelecanus crispus, Bruch, Isis (1832), p. 1109; Licht. Abhandl. Akad. Wiss. Berl. (1838) t. 3. fig. 4, p. 437; Gould's B. of Eur. pl. 406, vol. v.; Bree, B. of Eur. vol. iv. p. 167; Naum. Vög. Deutsch. vol. ii. p. 180, pl. 283; Reichen. Syst. Av. vol. i. pl. 36. figs. 378, 379; Feldegg?; Schleg. Mus. Pays-Bas, 4^{me} livr. p. 32; Bon. Consp. Gen. Av. vol. ii. p. 162. sp. 2; Brandt, Icon. Animal. Rossic. Nov. (1836) p. 59; Selat. P. Z. S. (1868) p. 267.

P. onocrotalus, Pall. Ross.-Asiat. vol. ii. p. 292; Eversm. in Script. Literar. a Cæsarea Universit. Casanien. editis (1835), fascic. ii. p. 370.

P. patagiatus, Brehm, Isis (1832), p. 1109.

Head crested; feathers of the forehead advancing on each side towards the nostrils, forming a concave line upon the culmen. Gular pouch extending for about 4 inches upon the throat, in a gently curved line from the base of the lower mandible. The feathers of the head and neck are long, narrow, and filamentous. The body-feathers terminate in long points, those of the under surface being very narrow. The entire plumage, save the primaries, is silvery white; a yellow tinge upon the long feathers of the breast; those of the back wings and tail have black shafts. Primaries black, greyish at their bases and inclined to grey at their tips. The upper mandible is grey, marked with blue and red; and on each side, at the base of the under mandible, a spot of yellowish grey. Gular pouch deep orange, intermingled with bluish. Naked skin round the eye reddish, with a blue shade near the bill. Tarsi and feet light flesh-colour. Iris yellow.

Wing 26 in.; tail (twenty-two feathers) 6½ in.; bill, along culmen, 16 in.; tarsus 4½ in.; middle toe 4½ in.

The young are devoid of crest, have a greyish pouch, and the entire plumage brownish grey.

Hab. Dalmatia, Greece, Russia, Asia, and northern parts of Africa, China.

This splendid bird, the largest of the genus, may stand as the

type of one of the two groups which the Pelicans seem naturally to comprise—that one in which the feathers of the forehead form a concave line upon the culmen. It is easily distinguished in the mature state from all the other species by the thick mass of recurving feathers upon the head (which are loose and fall over on each side, producing a conspicuous crest), by the lanceolate feathers of the breast, and by its comparatively shorter tarsus. The present species being comparatively recently known, having been described by Bruch, in 'Isis,' in 1832, its synonymy is not in any way confused—quite a relief among this family of birds, so many of which have their synonyms so sadly involved that it seems to be almost a hopeless task to restore them all to their proper places.

This species, according to Baron Feldegg, arrives in Dalmatia in the spring and autumn, and prefers the river Naranta, near Fort Opers, where it is bordered with morasses. Count v. d. Mühle, 'Orn. Griech.' p. 132, as quoted in Bree's 'Birds of Europe,' says "it is very plentiful in Greece the whole year through; and on many lakes and swamps, such as Zigeri, Kopai, and Paralyumi, are broad colonies of them. They are also very plentiful on the lakes of Missolonghi and Thermopylæ. In places incredibly difficult to reach, where floating islands are found, they place their nests very thickly together, supported among the reeds and rushes, and generally soaked with wet. The whole neighbourhood of these congregated nests is covered with their dull white dung and a multitude of foul fish which they have dropped about, and which make the spot horribly offensive. The yellow-grey young birds have a very unsightly appearance, and these never-satisfied screamers, with their shrill shrieking voice, and the unformed head hanging on the crop, make an unsightly picture."

PELECANUS RUFESCENS.

Red-backed Pelican, Lath. Gen. Syn. vol. iii. pt. 2, p. 584. sp. 6 (1785).

Pelecanus rufescens, Gmel. Syst. Nat. vol. i. (1788) p. 571. sp. 13; Reich. Syst. Av. pl. 38. fig. 386, & pl. 38. figs. 878 & 384, 385 (juv.); Rüpp. Atl. t. 21, p. 31; *id.* Reise im nördl. Afrika, Zool. p. 439; Licht. Abhandl. Akad. Wiss. Berl. (1838) t. 25. sp. 5, & tab. 3. fig. 3; Bon. Consp. Gen. Av. vol. ii. p. 162; Bonnat. Ency. Méth. Ornith. (1790) p. 44; Steph. Shaw's Gen. Zool. xiii. p. 114; Lath. Ind. Ornith. vol. ii. p. 584. sp. 6; Gray, Gen. of Birds, vol. iii. sp. 6; Scat. Proc. Zool. Soc. (1868) p. 267, pl. 26 (juv.).

P. cristatus, Less. Traité d'Ornith. p. 602 (1831).

P. phæospilus, Wagl. Isis (1832) p. 1233.

P. roseus, Donnd. Zool. Beitr. vol. ii. pt. 1, p. 848. sp. 9; Bennat. Ency. Méthod. Ornith. (1790) p. 43; Gmel. Syst. Nat. (1788) p. 570. sp. 9.

P. philippensis, Jerd. B. of Ind. iii. p. 858 (juv.); Gmel. Syst. Nat. (1788) vol. i. p. 571. sp. 11; Lath. Ind. Ornith. vol. ii. p. 883. sp. 5 (1790); Gray, Gen. of Birds, vol. iii. sp. 2 (1849);

Reich. Syst. Av. vol. i. pl. 36. fig. 877 (juv.); Donnd. Ornith. Beitr. vol. ii. pt. 1, p. 849. sp. 12; Sclat. Proc. Zool. Soc. (1868) p. 268.

Pélican des Philippines, Buff. Pl. Enl. 965; Bonmat. Ency. Méthod. Ornith. (1790) p. 43.

Rose-coloured Pelican, Lath. Gen. Syn. vol. iii. p. 579 (1785).

Pelecanus javanicus, Jerd. B. of Ind. vol. iii. p. 857.

Le Pélican rose de l'île de Luçon, Sonn. Voy. p. 91, pl. 54, vol. iii. (1776).

Le Pélican brun de l'île de Luçon, Sonn. Voy. p. 91, pl. 53, vol. iii.

Pelecanus manillensis, Gmel. Syst. Nat. (1788) vol. i. p. 571. sp. 11; Lath. Ind. Ornith. vol. ii. p. 883. sp. 4; Donnd. Ornith. Beitr. vol. ii. pt. 1, p. 849. sp. 11.

Onocrotalus philippensis, Briss. tom. vi. p. 527. sp. 3, t. 46; Bon. Consp. Gen. Av. ii. p. 162; Schleg. Mus. Pays-Bas, 4^{me} livr. p. 33.

Pelecanus calorhynchus, Hodgs.; Gray, Zool. Misc. p. 86.

P. gangeticus, Hodgs.; Gray, Zool. Misc. p. 86.

P. philippensis, J. E. Gray, Cat. Mamm. and Birds in Brit. Mus. presented by B. H. Hodgson.

Adult.—Head with a long, full, pendent crest, some of the feathers 5 inches in length. Feathers of the neck and head short, soft, rather furry to the touch; those of the body and wing-coverts long, and narrow lanceolate in form. Feathers of the forehead coming down to the bill, forming a concave line upon the culmen. Gular sac, starting from the base of the lower mandible, descending in a gently curved line for about 6 inches upon the neck. Bare skin around the eye contracted, of small dimensions, extending no distance behind the eye, reaching to base of upper mandible in front. Head and neck soiled white; crest dark grey, tinged with rose, each feather tipped with white. Back and upper tail-coverts deep rich rose-colour. Feathers on the crop long, stiffened, yellowish. Wings yellowish white, secondaries silver-grey; primaries black, with black shafts, white at base, with white shafts, brownish at their tips. Tail silver-grey; shafts of greater and lesser coverts, secondaries, and tail-feathers black. Bill yellowish, without any spots upon the upper mandible. Bare ocular space flesh-colour, with a black conspicuous spot near the upper mandible; gular pouch yellowish, streaked with reddish lines. Tarsi flesh-colour. Length about 60 inches; wings, from carpal joint to end of primaries, 20–24 inches; tail 8 inches; bill, along culmen, 15 inches; tarsus $3\frac{3}{4}$ inches; middle toe $4\frac{1}{4}$ inches.

A second specimen is somewhat younger, probably assuming for the first time the adult livery, and not in as perfect plumage as the first. It is devoid of crest; the feathers of the head and neck are short, brown tipped with white, giving to this part a mottled appearance. The remainder of the plumage is dark grey, centre of the feathers brown, secondaries tipped with light brown; there is more of the rose-colour, however, present, this hue extending somewhat

upon the flanks, and also covering the vent and entire under tail-coverts. The measurements are:—wing 24 inches; tail 8 inches; bill, along culmen, $13\frac{1}{2}$ inches; tarsus $3\frac{3}{4}$ inches; middle toe 4 inches.

A third specimen, still younger, has the head and neck covered with a whitish down, a few short feathers standing out from the occiput. The feathers of the body rounded, none of the lanceolate shape (so conspicuous a feature in the adult) yet present. Upper parts and wings light brown, each feather with a broad margin of white; secondaries dark brown in the centre, fading out gradually to a brownish grey on the edges; primaries brownish black. Back and upper tail-coverts pure white, with none of the roseate tinge so prevalent in the more matured individuals. Tail silvery white; shafts of the feathers of the tertials, secondaries, primaries, and tail black, white at their bases. Bill clear yellow; the upper mandible with two rows of impressed black spots; bare skin around the eye yellow. (Entire under parts pure white; the feathers soft and downy.) The colours present in life having all disappeared. Wing, from carpal joint, 22 inches; tail 8 inches; bill, along culmen, $12\frac{1}{4}$ inches; tarsus $3\frac{3}{4}$ inches; middle toe 4 inches.

Hab. Nubia, Abyssinia, Senegal, Madagascar, India, Cochinchina, Malacca, Philippines, Java, &c.

The synonymy of this species appears to be in a sad state of confusion, arising chiefly from the doubts existing as to whether this bird and *P. philippensis* are distinct—a circumstance which may indeed be very seriously questioned, as the differences that are claimed as sufficient to separate them are very slight, and may only be the result of age. Latham, in his 'Synopsis,' is the first to describe this species, which is sufficiently well done to leave no doubt of the bird meant by him; besides, the name which he conferred upon it, that of the *Red-backed Pelican*, indicates the adult of this species, and no other, as it is the only one of this genus which has the rose-colour restricted to these particular portions of the body. Gmelin, three years afterwards, in his 'Systema Naturæ,' confers upon Latham's bird the name of *rufescens*, which, by the laws of priority, is the one it now possesses. The *Pelecanus cristatus* of Lesson appears to be a bird of this species. The long lanceolate feathers of the crest and back delicately tinted with yellowish, together with the square shape of the frontal feathers, would seem to point out the present bird. The pure white of the plumage ("plumage blanc pur") cannot be taken as referring to the entire bird, as, further on, the description says, "plumes du cou et du dos minces, effilées, légèrement soufrées," which is observed also in specimens of *rufescens*. The absence of all mention of the rose-colour on the back arises probably from the fact of Lesson's specimen not being in the dress of the fully matured bird, which we may suppose alone possesses this beautiful hue. The *Pelecanus phæospilus* of Wagler is probably the present species, although he gives no description to enable the bird he has in view to be definitely ascertained. He gives Senegal as the locality of his species, which is one of the habitats of *P. rufescens*.

The *P. philippensis* of Jerdon is undoubtedly the immature bird of *P. rufescens*; and the young, as described by him, is a bird of this species in its first stage of plumage. Rüppell's figure exhibits very fairly the adult in perfect plumage, and is the only one yet given by which the species is properly represented, although the drawing may not be so artistic as could be wished. A specimen of this bird in the British Museum, from Nepal, Hodgson's collection, is very interesting, as it is just changing to the adult plumage, and exhibits very distinctly the reddish colour on the back and rump, while still retaining the black marks on the upper mandible, thus combining the characteristics of *rufescens* and *philippensis*, and showing that the latter supposed species is but the young of the former.

It is very difficult to decide what species Jerdon intends by his *P. javanicus*, as he seems to confound three in one, viz. *P. javanicus*, *P. minor*, and *P. rufescens*. He describes his bird as having broad black margins on each side of the tertiaries, which is truly a character of *javanicus*; but then he speaks of an occipital crest and golden-yellow breast, which, with the dimensions given, would seem to refer his specimen to "*minor*;" while, at the conclusion of the article, he says, "forehead with the frontal plumes not narrowed in front, but truncated and emarginate; bill with a double series of impressed dark spots." Now the form of the frontal feathers here described renders it impossible that the bird he had in view could belong to any species of the *onocrotalus* style, and therefore both *javanicus* and *minor* are excluded from all further consideration; while the truncate and emarginate frontal plumes, with the dark spots upon the bill, are characteristics of young *rufescens*; therefore I have referred Jerdon's birds to the present species.

PELECANUS FUSCUS.

Pelecanus fuscus, Linn. Syst. Nat. (1766) p. 215; Vieill. Gal. Ois. t. 276; Licht. Abhand. Akad. Wiss. Berl. (1838) t. 3. f. 6; Donnd. Ornith. Beitr. vol. ii. pt. 1, p. 848; Aud. B. of Am. t. 251. fig. 421; *id.* Orn. Biog. vol. iii. p. 376; Reich. Syst. Av. t. 37. figs. 382, 383; Schleg. Mus. Pays-Bas. 4^{me} livr. p. 28; Sclat. Proc. Zool. Soc. (1858) pp. 268 & 269; Bon. Consp. Gen. Av. vol. ii. p. 163; Lawr. B. of Am. p. 870; Lath. Ind. Orn. vol. ii. p. 833. sp. 3; Bonnat, Ency. Méth. Ornith. (1790) p. 43.

Pélican brun d'Amérique, Buff. Plan. Enl. 957.

Charlestown Pelican, Penn. Arct. Zool. vol. ii. p. 308. sp. 506; Lath. Syn. vol. iii. p. 580. sp. 3.

Pelecanus carolinensis, Gmel. Syst. Nat. (1788) vol. i. pt. 2, p. 571; Bonnat. Ency. Méth. Ornith. (1790) p. 52; Lath. Ind. Ornith. vol. ii. p. 884. sp. 7.

Onocrotalus fuscus, Bon. Consp. Gen. Av. vol. ii. p. 163.

Leptopelecanus fuscus, Reich. Syst. Av. pl. 70.

Dusky Pelican, Penn. Arct. Zool. vol. ii. 308. sp. 507.

Brown Pelican, Lath. Syn. vol. iii. p. 585. sp. 7.

Head with slight occipital crest. Feathers of the forehead forming a concave line upon the culmen. Bare space between the bill and the eye. Gular patch large, extending in nearly a straight line from under mandible halfway down the neck. Feathers of the neck and throat soft and downy, becoming, however, rather stiff on the upper part of the breast. Tail 22 feathers.

Adult male in breeding-plumage.—Fore part of head bright yellow, crown to occiput and a narrow line running down the neck along the edge of the pouch white; rest of neck and a short line between the white in front, at the lower part, deep rich chestnut. The neck at other seasons of the year is yellowish white. Short crest reddish brown. Back and wings ash, with dusky edges, the latter colour becoming almost obsolete on the greater coverts. Primaries blackish brown; the shafts white for the greater part, black towards the tips. Secondaries greyish brown, margined with pale brown. Tail greyish ash; shafts of feathers blackish brown, white at their base. At the end of neck in front a small patch of light yellow. Under parts dark brown; sides marked with narrow longitudinal white lines. Bill greyish with a brown tinge, spotted irregularly with carmine. Under mandible for half its length and tip of upper mandible blackish. Bare space about the eye blue; gular pouch blackish, streaked with brownish lines. Tarsi and feet black. Length about 50 inches, wing 23 inches, tail 7 inches, bill 13 inches, tarsus $2\frac{1}{2}$ inches, middle toe $3\frac{3}{4}$ inches.

The female is rather larger than the male, and resembles him in colour of plumage.

Young.—Upper parts generally dark brown, secondaries and coverts tipped with lighter brown. Primaries and tail brownish black, with white shafts. Bill and gular pouch greyish blue. Under parts white. Tarsus and feet lead-colour.

Hab. Shores of the Gulf of Mexico, California.

The Brown Pelican is very numerous on the sea-coast of the Southern States, particularly at Key West, in Florida, where it frequents the salt-water inlets and bays that abound there. In its habits it differs somewhat from the White Pelican, especially in its mode of procuring food, which is obtained by plunging obliquely into the water, frequently immersing the whole body. The prey is scooped up and immediately swallowed, and the plunge repeated until its hunger is satisfied. Audubon states that the Black-headed Gulls follow this bird when on a fishing-excursion, and when the Pelican has obtained a quantity of fish some frequently fall out of its pouch when the water is allowed to escape. The Gulls, to obtain these, alight upon the bill or head of the Pelican, and seize them before they reach the water. I have never witnessed this curious fact. The food of this species appears to be entirely fish, small ones being usually selected. The Brown Pelican goes in flocks until the breeding-time, which is about the middle of April, when the old ones separate from the younger birds. The nest, which is constructed of sticks, roots, and plants, is placed on or near the tops of the mangroves; and the eggs, two to three in number,

are white, with a few faint blotches of pale blue. The shell is thick and rough. The young are covered with down of a creamy colour, and are fed by their parents, at first with fish well macerated, but after they acquire more strength it is given to them entire. The flight of this bird is rather heavy, but well sustained, and they proceed by regular flappings and sailings. It is fond in warm, calm weather of rising high in the air, which is accomplished by wide circles, and then sailing for a considerable length of time. Their evolutions at such times are very beautiful. The flesh of this bird is tough and fishy, unfit for food, although the negroes are accustomed to eat the young.

There is no difficulty in the synonymy of this species.

PELECANUS MOLINÆ. (Plate XLIV.)

Pelecanus thagus, Steph. Gen. Zool. vol. xiii. p. 117; Gmel. Syst. Nat. vol. i. p. 577 (1788); Molina, Chil. p. 212?; Gay, Hist. Chili, Zool. vol. i. p. 494; Bonnat. Ency. Méth. Ornith. (1790) p. 46; Donnd. Ornith. Beitr. vol. ii. pt. 1, p. 859. sp. 30.

Onocratalus thagus, Bon. Consp. Gen. Av. vol. ii. p. 164 (1851?).

O. rostro denticulato, Briss. Orn. vol. vi. p. 523 A.

Pélican à bec dentelé, Buff. Hist. Nat. des Ois. 8. p. 309.

Onocrotalus hernandezii, Wagl. Isis (1832), p. 1233. sp. 1.

O. mexicanus dentatus, Raii Syn. p. 127.

Saw-billed Pelican, Lath. Syn. vol. iii. pt. 2, p. 579 A.

Pelecanus molinæ, G. R. Gray, Gen. of Birds, vol. iii. (1849); Selat. Proc. Zool. Soc. (1868) p. 269.

Hab. South America!

As it is exceedingly uncertain what bird Molina meant when he wrote his description of *Pelecanus thagus*, and as it will not answer for any bird known to ornithologists at the present day, his name must become a synonym (although a doubtful one) of the present species, for which I have adopted the appellation bestowed upon it by Mr. Gray.

It is evidently a very near ally of the more northern *P. fuscus*, differing chiefly in its larger size.

Beside the two specimens in the British Museum, there is one immature in the Academy of Natural Sciences of Philadelphia, and one in the Paris Museum.

PELECANUS ERYTHORHYNCHUS.

Rough-billed Pelican, Lath. Syn. vol. ii. (1785) p. 586.

Pelecanus erythrorhynchus, Gmel. Syst. Nat. (1788) vol. i. p. 571; Bonnat. Ency. Méth. Ornith. (1791) p. 44.

P. trachyrhynchus, Lath. Ind. Ornith. p. 884. sp. 8; Gray, Gen. of Birds (1845), p. 309; Lichten. Abhandl. Akad. Wiss. Berl. (1838) t. 3. fig. 5; Steph. Shaw's Gen. Zool. vol. xiii. (1825) pt. 1, p. 117.

Cryptopelicanus trachyrhynchus, Bon. Consp. Av. vol. ii. (1865) p. 163.

Pelecanus onocrotalus, Bon. Syn. (1828) no. 351; Nutt. Man. vol. ii. (1834) p. 471; Swains. Faun. Bor.-Am. vol. ii. p. 472 (1831).

P. americanus, Aud. Orn. Biog. vol. iv. (1838) p. 88; *id.* Syn. 1839; *id.* Birds Amer. vol. vii. p. 20, pl. 422.

P. brachydactylus, Licht. ? (ubi?).

P. trachyrhynchus, Reich. Syst. Av. vol. i. t. 38. figs. 881, 882.

P. onocrotalus, Penn. Arct. Zool. vol. ii. p. 306. sp. 505.

P. erythrorhynchus, Schleg. Mus. Pays-Bas, 4^{me} livr. p. 35.

P. trachyrhynchus, Sclat. Proc. Zool. Soc. (1868) p. 269.

P. erythrorhynchus, Donnd. Ornith. Beitr. vol. ii. pt. 1, p. 850. sp. 15.

Adult male.—General colour of plumage pure white; the crest upon the nape, most elongated during the breeding-season, at other periods of the year but little of it remaining, pale yellowish, as are also the elongated feathers upon the fore part of the breast. Primaries black, with white shafts, becoming blackish towards the end. Inner secondaries white, remainder black, with their bases white. A thin crest upon the upper mandible, in the breeding-season, about halfway from the point. Bill, space about the eye, gular sac, and feet bright yellow.

Bare space between the eye and the bill not extending behind the eye. Feathers of the throat extending for about two inches upon the sides of the lower mandible, dividing the gular sac from the bare ocular space; differing in this respect from all the other species of this genus. Feathers of the forehead slightly pointed at the culmen, but not forming so well defined an angle as in *onocrotalus* and others of that group. Tail of 24 feathers. Gular sac extending in a decidedly curved line down the throat for about 8 inches.

Length 60 inches; wing, from carpal joint, 23 inches; tail 6 inches; bill, along culmen, 14 inches; tarsus $4\frac{1}{2}$ inches; middle toe $4\frac{1}{4}$ inches.

Female rather less in dimensions, and destitute of the horny crest on the upper mandible.

Hab. North America.

This Pelican is only found in the New World, but has been frequently confounded by authors with the *P. onocrotalus* of Europe, to which, indeed, it bears a very close resemblance in general appearance, but presents characters to the investigator sufficient to cause its separation into a distinct species. The horny crest on the upper mandible is peculiar to the male only, and is assumed at the breeding-season, after which period it falls off, leaving no evidence of its former existence. Mr. Ridgeway, during an excursion to Pyramid Lake, in Nevada, found these birds breeding on an island in the lake; and before they left, the shores of the island were covered with the horny crests which had fallen from the mandibles of the males. They seem to cast them somewhat as deer do their horns. The present species is pretty generally distributed throughout North America, rather rare, however, on the Atlantic coast of the northern

portion of the United States, and has been met with in the fur-countries up to the 61st parallel. On the southern coast of the United States they are very abundant; and I have witnessed them in winter on the sea-beach at Florida, standing close together in long rows of many hundreds of individuals, enjoying a siesta after fishing. This species does not plunge into the water after its prey, as is the custom of its relative the *P. fuscus*, but swims along, beating the surface of the water with its wings, and scooping up great numbers of fish at once. When raising the bill from the water, the point is held downwards until all the water has been allowed to run out from the sac, and then the small fish contained in the skinny bag are devoured at leisure. Sometimes so many fish or such large ones are obtained that the sac hangs down nearly to the ground, it is so very elastic; while at other times, when empty, it is drawn up between the crura of the lower mandible. When flying, these birds proceed in single file, flapping their wings two or three times in succession, and then sailing along for some distance, when the flappings are repeated. It is a very agreeable sight to witness them proceed in this manner along the surf, just clearing the waves as they roll and toss beneath them, and at times disappearing in the trough of the sea, to rise again over the crest of some mighty breaker. When on the wing, the head is drawn in close to the shoulders, the webbed feet extended behind. I have never heard them utter any sound as they thus proceeded.

The synonymy of this species does not involve any particularly doubtful point; several of the old authors, such as Pennant, and indeed some of the latter ones, as Swainson and Nuttall, confound it with the European bird. The name *erythrorhynchus* given to it by Gmelin, although perhaps unfortunate, since the bill is not red, yet has priority over Latham's more appropriate one of *trachyrhynchus*, and, consequently, must stand as the name for the species. The efforts made by some later writers to substitute Latham's name for that of Gmelin's cannot be countenanced; for it is contrary to the laws of priority, which is professed to be accepted as influencing the nomenclature of science; and if, simply because a name may be inappropriate, it is to give way to some other, then indeed a fine field is open for some one desirous of acquiring distinction in this line, as numerous names now accepted in ornithology could very properly be superseded by others.

PELECANUS CONSPICILLATUS.

Pelecanus conspicillatus, Temm. Pl. Col. 276; Gould, B. of Austr. vol. vii. pl. 74; Bon. Consp. Gen. Av. vol. ii. (1857) p. 161; Reichen. Syst. Av. vol. i. pl. 37. figs. 380, 381, and pl. 37 b. figs. 2318 & 2329; Schleg. Mus. Pays-Bas, p. 36, 4^{me} livraison; Less. Traité d'Ornith. p. 602. sp. 3.

Catoptropelicanus conspicillatus, Reichenb.

Pelecanus australis, Steph. Shaw, Gen. Zool. vol. xiii. (1825) p. 113.

Ne-rim-ba and *Boo-dee-lung*, aborigines of Australia.

A short crest on back part of head. Gular pouch extending in a direct line from the lower mandible for about 3 inches upon the throat. Around the eye a bare space separated from the bill by a narrow line of white feathers. Scapulars, lower portion of greater wing-coverts, primaries, and secondaries, some feathers of the upper tail-coverts, and tail jet-black. Rest of plumage white, with a yellowish tint upon the breast. Gular pouch white, as are also the mandibles, the latter having a bluish tinge darkest at the tip, the cutting edges yellow; nail of mandible greenish yellow. Irides dark brown; orbits pale sulphur-yellow, bounded by a narrow ring of pale bluish grey.

Total length about 5 feet; upper mandible 18 inches in length along the culmen, its greatest width $1\frac{3}{4}$ inch; wing 25 inches; tail 10 inches; tarsus 5 inches; middle toe, without nail, $4\frac{3}{4}$ inches; outer toe $4\frac{1}{2}$ inches, inner 3 inches, hind toe $1\frac{1}{2}$ inch.

Hab. Australia, Van Diemen's Land.

This fine species is an inhabitant of Van Diemen's Land and the continent of Australia, in which countries it is very abundant. So numerous, indeed, is it on the inland waters, that Capt. Sturt states, as related by Mr. Gould, "that a channel of a river from 70 to 80 yards broad was literally covered with Pelicans, and that they were in such numbers upon the Darling as to be quite dazzling to the eye."

The Australian Pelican cannot easily be confounded with any other species, its black wing-coverts and tail serving to distinguish it from its fellows.

The nest, according to Mr. Gould, is "a large structure of sticks and grassy herbage, placed just above high-water mark; the eggs are generally two in number, of a dirty yellowish white, $3\frac{3}{4}$ inches long by $2\frac{3}{4}$ inches broad."

This species appears to be generally distributed throughout Australia, although it is gradually retiring before the advances of civilization.

8. Description of a new Species of Mexican Wren. By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to the Society.

(Plate XLV.)

When looking through the fine series of American birds in the Royal Zoological Museum of Berlin last summer, I found an example of a species of Wren from Mexico, which was quite new to me, and which, although long since provided with a MS. name, appeared to be undescribed. Dr. Peters, with his wonted liberality, upon my pointing this out to him, immediately offered me the loan of the specimen for examination and description, if new; and as, after carefully comparing it with other species known to me, I find my anticipations verified, I propose to characterize the species under the specific name already bestowed upon it in the Berlin Museum.

THRYOTHORUS NISORIUS, sp. nov. (Plate XLV.)

Troglodytes nisorius, Licht. in Mus. Berol.; ej. Nomencl. p. 34.

Supra læte rufus, alis caudaque nigro regulariter transfasciatis: superciliis elongatis albis: lateribus capitis albis nigricante variegatis: subtus albus, nigro omnino transvittatus, fere sicut in Sylvia nisorio: tectricibus subalaribus albo nigroque variegatis: rostro et pedibus corneis: long. tota 5·5, alæ 2·7, caudæ 2·2, tarsi 0·85 poll. Angl.

Hab. In Mexico, Real Arriba (Deppe).

Mus. Berolinensi.

Obs. Proximus *T. pleurosticto*, mihi, sed corpore subtus omnino transfasciato diversus.

This little Wren was one of the many novelties discovered by Herrn Deppe and Schiede during their travels in Mexico. In 1830 a sale-list of the duplicate specimens of these travellers was printed at Berlin by W. Deppe, which contained very short descriptions of some of the new species by the late Prof. Lichtenstein*. At the close of the list is announced the approaching publication of a 'Prodromus Faunæ Mexicanæ' by the latter zoologist, which promise, however, was never redeemed.

This tract is now very scarce, and I have never seen the original, although I have made repeated inquiries after it at Berlin and elsewhere. It has, however, been lately reprinted by Dr. Cabanis in his 'Journal für Ornithologie'†. Dr. Cabanis has likewise promised us a critique on the new species described in it according to the typical specimens of the Berlin Museum, which I hope will shortly appear, as it will be of great advantage to the students of Mexican Ornithology. The characters given by Prof. Lichtenstein are, in many cases, so short that without some such assistance it is impossible to to recognize the "new species" with certainty.

9. Remarks on two Species of Mammals described from specimens recently living in the Society's Gardens. By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to the Society.

(Plate XLVI.)

1. MICO SERICEUS, Gray, P. Z. S. 1868, p. 256.

On March 21, 1868, Mr. Bartlett purchased for the Society, from a dealer in Liverpool, a living male specimen of a small Marmoset Monkey which was quite new to me. It was stated to have been obtained out of a vessel coming from Pará, and to be the only

* Preis-Verzeichniss der Säugethiere, Vögel, Amphibien, Fische und Krebse, welche von den Herren Deppe und Schiede in Mexico gesammelt worden, und bei dem unterzeichneten Bevollmächtigten in Berlin gegen baare Zahlung in Preuss. Courant zu erhalten sind. Berlin, 1830.

† Journ. f. Orn. 1863, p. 54.