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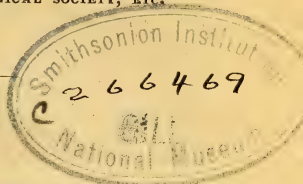
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NATURE IS A BOOK WRITTEN ON BOTH SIDES, WITHIN AND WITHOUT, IN WHICH THE FINGER OF GOD IS CLEARLY VISIBLE—A SPECIES OF HOLY WRIT IN A BODILY FORM—A GLORIOUS PANEGYRIC, AS IT WERE, ON GOD'S OMNIPOTENCE, EXPRESSED IN THE MOST VIVID SYMBOLS.—THE OUTER PART OF THIS SACRED VOLUME ATTESTS THE SUPREME POWER, WISDOM, AND GOODNESS OF THE CREATOR, IN CHARACTERS TOO CLEAR AND LUMINOUS TO BE UNPERCEIVED OR MISREAD BY THE DULLEST OR THE MOST VITIATED EYE. THE INNER PAGES COMPRISE A STILL MORE GLORIOUS REVELATION, BUT THEIR LANGUAGE IS MORE MYSTERIOUS.

FREDERICK VON SCHLEGEL'S  
*Philos. of Life*, p. 85. &c.

ON  
THE NATURAL HISTORY  
and Classification  
OF  
BIRDS,

By William Swainson, A.C.S. F.R.S.L.S.  
AND OF SEVERAL FOREIGN ACADEMIES.

VOL. II.



W. Swainson. del.

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The Author has found it necessary to omit the "DESCRIPTION OF NEW SPECIES," which he had intended to introduce into the present Volume. These descriptions will, however, be inserted in a subsequent Volume of the Series of Natural History.

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ON THE  
NATURAL HISTORY AND CLASSIFICATION  
OF  
BIRDS.

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PART III. CONTINUED.

ON THE NATURAL HISTORY AND RELATIONS OF THE  
DIFFERENT ORDERS, TRIBES, AND FAMILIES OF  
BIRDS.

CHAPTER III.

ON THE DENTIROSTRAL ORDER, THE LANIADÆ, OR SHRIKES.

(1.) **T**HE conclusion of our last volume terminated our exposition of the relations of the Dentirostral Order. Our chief reason for entering so fully into that exposition, as we then stated, was to substantiate the three leading principles upon which (as we maintained) the system of nature is founded; namely, 1. The circular progress of affinities; 2. The theory of representation, by which the contents of one group analogically represent the contents of all other groups; and, 3. The definite nature of the principal types, contained in every circle. These are the chief propositions with which we commenced our exposition of the whole animal kingdom\*, and which

\* Classification of Animals, 241.

we are bound to make good, as best we can, in the details of all its classes and prominent groups: we are, in short, to bring our theory into practice, and — so far as our limited knowledge will permit — to substantiate this theory by analysis. If we fail in this, — if, in a group confessedly natural, our theory disturbs and disarranges the evident series of nature, or fails to explain the principles of its minor variations, — we are quite willing it should be received with doubt and distrust. Or if our opponents, by any theory of their own, equally comprehensive, can explain and illustrate what this cannot do, we will then not only consent to abandon our propositions as untenable, but adopt any other more demonstrative of the unity of Nature's laws. Until this, however, is done, or until something more philosophic is urged against us than the old reiterated assertion that "the time has not yet come"\* for these investigations, &c. &c., we may be allowed to preserve silence: these vague and querulous complaints, in truth, have emanated from those *only* who have hitherto done nothing to place their names in the prominent ranks of science, and who may consequently be presumed inadequate judges upon matters they have not sufficiently studied. We may be allowed to remind such objectors, as well as to urge upon all naturalists, that it is both unphilosophic and unfair to pronounce upon the value of any theory, until the whole of the facts intended to prove its truth are laid before them. We have, in the onset, clearly stated our propositions, and declared that our proofs would follow, as we successively brought under examination every class of the animal kingdom. When the whole of these are gone through, and the CABINET OF NATURAL HISTORY is completed, it will then be the proper time to determine whether our views of the general laws of nature are erroneous, whether we have not sufficient facts before us, or whether we are to wait, as these writers insinuate, (perhaps another century) until our knowledge of natural objects — almost overwhelming as it now is —

\* Magazine of Zoology and Botany, i. p. 20, &c.

becomes *more* extensive, or rather, from the want of some generalising principle of classification—*more confused*. Why the philosophy of Zoology is to stand still, while that of all other sciences is rapidly advancing, and consequently simplifying, and why we are not to generalise that which we know, from a fear of there existing things which we *do not*, and probably never *shall*, know, are questions almost too absurd to be asked.

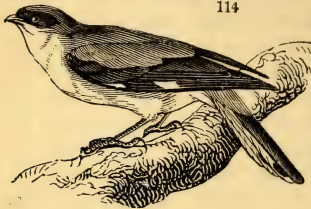
(2.) The limits of one volume (for our first is almost entirely an introduction) are totally inadequate to that ample elucidation of the natural classification of birds which the professed ornithologist would desire, particularly when the arrangement we shall here propose, from its novelty, would seem to require so much explanation. We possess sufficient materials, indeed, for filling four such volumes as this; but the original portion devoted to Ornithology having been already exceeded, there remains no other plan to be followed than taking a rapid survey of the chief divisions, dwelling occasionally upon such as require more than ordinary elucidation, and giving, in some instances only, examples of that extended analysis which becomes necessary to full demonstration, and by which the circular groups we shall here indicate may be better understood.

(3.) The rapacious habits of the LANIADÆ, or shrikes, are known to every one acquainted with our native birds; and the comparisons that have been drawn between them and the falcons are no less true in fact, than beautiful in analogy. Many of the falcon species sit on a tree for hours, watching for such little birds as come within reach of a sudden sweep\*; it then pounces on its quarry, seizes it by its talons, bears it to its roost, and devours it piecemeal. These are precisely the manners of the true shrike; yet, with all this, the structure of the two birds, and their more intimate relations, are so different, that they cannot be classed in the same order: they illustrate, indeed, that system of symbolic relationship, termed analogy, which pervades creation; but the two

\* Dr. Richardson, in Northern Zoology, vol. ii. p. 32, &c.

groups are in no wise connected, and there is consequently no *affinity* between them.

(4.) The external characters of the shrikes, in the more typical groups, are very decidedly marked. The bill, as in *L. collurio* (fig. 114.), generally short and strong, is abruptly hooked at the end, and the notch so deep as to form a small tooth, more or less prominent, on each side: this projection is analogous to the teeth of quadrupeds, so far as to enable the bird to take a firm grasp of its food, and is used to divide it into pieces: the claws, also, as instruments of capture in the typical group, are peculiarly



fine and sharp,—a character which pervades, more or less, the whole family. This mode of darting suddenly on their prey (rather than hunting or searching for it) is most pre-

valent in those groups which are nearest related to the flycatchers, whose general weakness, however, confines their depredations to the smaller insects; larger and more powerful tribes being the food of the typical shrikes.

(5.) The divisions of this family, and their scientific peculiarities, have been dwelt upon at some length in another work (*Northern Zool.* vol. ii. p. 105.); we shall, therefore, here give an abridged but more popular complexion to the subject, without detailing the reasons which have guided our views of their natural arrangement. The following are the five divisions or sub-families:—1. The *Tyranninæ*, or Tyrant shrikes; 2. The *Ceblepyrinæ*, or Caterpillar-eaters; 3. The *Dicrurinæ*, or Drongo shrikes; 4. The *Thamnophilinæ*, or Bush-shrikes; and, 5. the *Lanianæ*, or true Shrikes. The first three of these sub-families constitute the aberrant circle, or that in which the characters of the shrike is least conspicuous. The fourth is the sub-typical; and in the

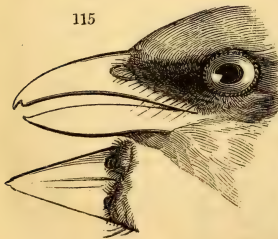
fifth we have the most perfect developement of the lanine structure.

(6.) We shall commence with the TYRANNINÆ, or tyrant shrikes, one of the aberrant divisions of the family, and thus gradually conduct the ornithologist to the more perfect or typical groups. It is seldom that the links of nature's chain, connecting two families, are so perfectly graduated as to perplex the scientific naturalist ; but the connection between the family of shrikes, and that of the flycatchers (*Muscicapidæ*), by means of the group now before us, is so perfect, that it is difficult at present to determine where one terminates, and the other commences. The water-chats of Brazil pass by such imperceptible degrees into the lesser tyrant shrikes of the same country (*Tyrannula* Sw.), that, although an observer on the spot, by studying the manners of these groups, might draw a line of distinction, the ornithologist of Europe, acquainted only with their dried skins, is at a loss to distinguish their remote ramifications. We may, however, form some idea on this difficult subject, by looking to the colours of the two groups. The water-chats (*Fluvicolinæ*), which seem to connect the tyrant shrikes to the flycatching family, or the *Muscicapidæ*, like very many other tribes, have their plumage black and white variously blended, but without any mixture of green. The lesser tyrants (*Tyrannula*), on the contrary, are all of an olive-coloured plumage ; that colour, in short, which is most adapted for concealment among foliage, and therefore suited to their manner of life : between these, however, we find some curious birds, which borrow the habits of both groups. The species called by Latham white-headed tody, for instance, is black and white : its general resort is on the sides of marshes, where it perches upon the reeds, and darts on passing insects in the same manner as a true tyrant shrike ; this we have ourselves repeatedly witnessed. Azara says, that it likewise chases insects upon the ground\* ; so that we have thus, in this one bird, the manners of both

\* Voy. vol. iii. p. 363.

groups exemplified. Whether this, or the *Tyrannula ambulans* of Brazil, which lives on the ground like a lark, constitute a generic type in this division, is at present uncertain. The lesser tyrants (*Tyrannulæ*) are spread over the whole of America, where they represent the true flycatcher (*Muscicapa*) of the Old World: both have nearly the same manners; and so closely do they resemble each other, that they can only be distinguished by their feet, tail, and wings. From these we may pass to the true or greater tyrants, by a little sub-generic group (*Milvulus* Sw.) having very long forked tails. The habits of the typical tyrants intimately resemble those of the lesser, but they feed upon larger insects more suited to their own size; some imitate the kingfishers, by diving in the water, and they will even prey upon small reptiles. The species, which are numerous, swarm in tropical America, where they are every where seen, perched upon naked branches, and uttering, at short intervals, a sharp and monotonous cry. The tyrants are bold and quarrelsome birds, particularly during the season of incubation: the male will not then suffer any birds to come near its nest; and becomes so infuriated against such unconscious intruders, that it will attack both hawks and eagles, with a determination not to be resisted, until they are fairly driven away.

(7.) From the tyrant shrikes to the *Ceblepyrinæ* or caterpillar-catchers, the passage is sufficiently marked by the Mexican genus *Ptiliogonys*\*, which brings them very close



together. We now come to a group which is as strictly confined to the old world as the last is to the New, yet not one species is found in Europe. Their bill (*fig. 115.*) is nearly as much depressed as that of the tyrants, but the absence of long bristles round the base shows that their food is quite different: we con-

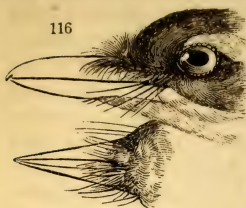
\*Zool. Ill. 2. pl. 62. 120.

sequently find that these birds lived upon soft caterpillars, which they search for among the foliage of high trees. Le Vaillant first made us acquainted with this fact, and pointed out the group. Nearly all the species are further distinguished by the peculiar construction of the feathers on the back: they are very thick set, and, when the hand is passed over them in a direction towards the head, they feel as if intermixed with little sharp spines, concealed beneath the surface. This singular construction is seen also in the trogons, and, in a less degree, in the families of orioles and cuckows: but for what particular purpose it is intended, we know not. The genus *Phænicornis*\* unites this division to the tyrants: the other genera, whose habits are unknown, will be found in the systematic arrangement.

(8.) We are led to the third division of shrikes, called, by Le Vaillant, Drongos (*Dicrurinæ*), by those caterpillar-catchers (*Erucivora* Sw.) which have only a few acute feathers on their back; or the genus *Oxynotus* may possibly effect this junction. The Drongos are flycatching birds, having their bill both compressed and depressed, and the mouth furnished with very stiff long bristles. These are entirely unknown in America, where they seem to be represented by the fork-tailed tyrants (*Milvulus* Sw.): like them they have the tail almost universally long and forked; and they associate, as do the American birds, in flocks, something like swallows, pursuing insects upon the wing in every direction. Bees appear to be a favourite food with these birds, as they are likewise with the king tyrant of North America (*Tyrannus intrepidus*). Some are ornamented with little recurved crests in front of the head; others have the neck feathers pointed and of a rich metallic hue; most have the tail remarkably developed; and nearly all are of a uniform glossy black colour: hence it becomes very difficult to distinguish the species, which, in truth, are much more numerous than has been generally imagined. In the genus *Analcipus* we first have a few bright colours. Only

\* Zool. Ill. 2d Series, pl. 52.

three species, natives of Madagascar and the Indian islands, have yet been discovered; they lead us to the swift shrikes (*Ocypterus* Cuv.), so named from their very



long wings: but in *Tephrodornis* (fig. 116.) these members again become like those of the Drongos. This latter genus is very remarkable; for, by the bristly nature and the incurved direction of the frontal feathers, we have a clear representation of *Chætolemma*, and all those

bristle-fronted birds which are analogical to *Prionops* and *Dasycephala*.

(9.) A few scientific remarks on the three last groups, forming the aberrant sub-families of the LANIADÆ, appear necessary. The approximation of the *Dicrurinae* to the *Tyranninae* has been thought so strong, and so decisive, that one ornithologist supposes they actually pass into each other. How this union, however, is absolutely effected, we are not prepared to state; yet it is not only highly probable, but what we should naturally expect; in which case the three aberrant groups would form their own circle. We might look for this union by means of the African Drongos (*Edolius* Cuv.) and the fork-tailed tyrants (*Milvulus* Sw.), since we have elsewhere pointed out (*Northern Zool.* vol. ii. p. 134.) the remarkable similarity of their manners and economy: yet, if we regard external structure, it seems to us that the genera *Tephrodornis* and *Saurophagus* make even a still nearer approach. As yet very few species are known of these latter; and, therefore, any decisive opinion would be premature. Certain it is, that *Saurophagus* evinces a much greater tendency to unite with *Tephrodornis*, than to pass, by a simple progression, into the true *Laniadæ* by means of *Falcunculus*; while, on the other hand, *Tephrodornis* is nearly as much allied to *Saurophagus* as to *Prionops*,—that genus, in fact, which is the first on entering the *Thamnophilinae*.



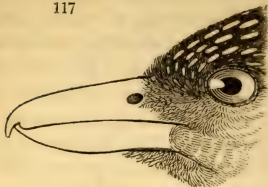
(10.) We now come to the THAMNOPHILINÆ, or bush-shrikes, where we have the characteristics of the family much more distinctly developed than in either of the three preceding divisions. The habits of these birds are strikingly opposed to those of the aberrant divisions. They live among thick trees, bushes, and underwood, where they are perpetually prowling about after insects and young and sickly birds; while in the breeding season they are great destroyers of eggs. They neither seize their prey by the claws, nor do they dart at it by flight: and we thus find that the first are thick and rather blunt, and the wings so short as to indicate great feebleness of flight: the bill, being the instrument of capture, is always stout, much more lengthened than in the true shrikes, and very abruptly hooked at the end, which is armed with a strong tooth. These characters are variously modified in the five principal genera which we shall now enumerate.

(11.) Of the genus *Prionops* only one species until lately was known (*P. plumatus*): it is common in Senegal, where it is stated to search for terrestrial insects in humid situations beneath the surface: this bird is remarkable for a peculiar kind of crest of rigid feathers, which not only falls back on the head, but is reversed over the base of the bill, giving a complete protection to the nostrils and the sides of the mouth. Now, we have already seen this very singular structure partially developed in the genus *Tephrodornis*; and there are so many other points of resemblance between the two, that we are inclined to look upon this as the point of union between the bush and the forked-tailed shrikes, or the *Thamnophilinæ* and the *Dicrurinæ*.

(12.) The genus *Thamnophilus* next succeeds: it is strictly typical, and shows the perfection of that particular structure which distinguishes the bush-shrikes: the bill (*fig. 117.*) is very powerful; and although many of the species far exceed the size of a thrush, there are others not much bigger than a wren. It is also a strictly geographic group, being confined to the hotter latitudes of America,

where the species are very numerous: the plumage is thick, but the texture of the feathers uncommonly soft

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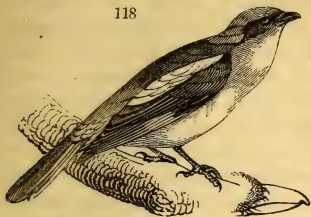
and lax: the colours are always sombre, but often variegated with much elegance by dark bands and white spots. One of the largest species, as if emblematic of their disposition, is covered all over with broad black

stripes, upon a fawn-coloured ground, strikingly analogous to the marks of the tiger. The genus *Malaconotus* represents these birds in Africa; and, although long confounded with them, their distinctions are very decisive: as the American group is distinguished by its dark colours, so is the African for the gaiety and brightness of the plumage. The *Malaconoti*, in fact, are the most beautiful of all the shrikes: the brightest crimson, combined with glossy black, or clear green with orange or yellow, decorate most of the species; others, however, have the sombre colour of the American group, but they are never banded; while a few so nearly approach the next, or typical shrikes, that it is extremely difficult to distinguish them, otherwise than by the great inequality of their lateral toes, — the inner one being always much shorter than the outer, and the latter often so connected to the middle toe that the feet become partially syndactyle. Of the Australian genus *Collurisoma* nothing beyond its external characters is known, while its species are very few, and their precise situation in this division remains to be demonstrated. They probably, however, represent the tenuirostral type.

(13.) The *Lanianæ*, or true shrikes, will complete the circle of this family. The precise passage between this and the last seems to be effected by a remarkable bird, discovered in South Africa by Mr. Buschell; it forms our genus *Chætoblemma*, and is the only short-billed shrike which has the frontal feathers stiff, and directed forward upon the

base of the bill: in this respect, and in its long wings, it presents a curious analogy to *Prionops* among the bush-shrikes. We need not dwell upon the peculiarities of the British shrikes (*L. rufus*, fig. 118.), since these may be learned

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from any book on native Ornithology; and those found beyond our islands have precisely the same bold and cruel disposition. As the genus *Lanius* is pre-eminently typical, not only of its own family,

but of the whole tribe of *Dentirostres*, or tooth-billed birds, we accordingly find that Nature has furnished every country in the world with examples of this, her most perfect form: even in New Holland,—a region which so often appears exempt from those laws of creation which regulate the animal distribution of other countries, — we have a peculiar type of the true shrikes, represented by the *Falcunculus frontalis* (fig. 119.). Its manners, however, are singularly at variance with all others: instead of watching for its prey, and devour-

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ing birds or grasshoppers, by impaling them upon thorns and feeding on them at leisure, like the true shrikes, it climbs among the branches of trees, strips off the bark, and devours the hard-coated beetles which lurk beneath.\* It would be difficult to conceive, theoretically, how a shrike could resemble a woodpecker; yet here is a bird having the form and structure of the first, with the habits of the second. This New Holland shrike, as being the scansorial type of the *Lanianæ*, becomes the

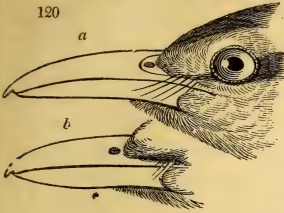
\* Lewin's Birds of New Holland.

representative of the titmice ; and hence it has the crest and nearly the same coloured plumage as the generality of species composing the genus *Parus*. This analogy, again, is further indicated by the great size of the hind toe ; which is so unusually large, as at once to evince the climbing habits of the bird, as affirmed by Lewin. This is not, however, the only analogy indicated by the colours of the bird ; for if we look to the Bentivi tyrant (*Saurophagus sulphuratus* Sw.), we see a bird in all its most striking peculiarities of plumage coloured like that of the *Falcunculus cristatus*, with this difference only,—that in one the back is olive brown, and in the other olive green. Now it is precisely at this point, where, according to our theory, the circle of the shrike family is closed ; and thus these two genera will stand in juxtaposition. Certain, however, it is, that of all the tyrants, the Bentivi is that which most resembles a true shrike ; not so much, perhaps, by its general structure, as by its living upon reptiles and even carrion, and thus becoming, like the shrikes, both insectivorous and carnivorous.

(14.) The two other genera comprised in this subfamily, are *Telophonus* and *Nilaus* ; both of which, like those already noticed, are entirely excluded from the New World. *Telophonus* has such a strong resemblance to the typical genus *Lanius*, as well as to *Malaconotus*, that, without a knowledge of the true characters of these three groups, an ornithologist may be much perplexed in detecting their essential differences. The genus *Lanius*, as already mentioned, is chiefly known in its outward appearance by its short and strongly toothed bill : but there is another character, equally important, which all writers have hitherto overlooked : this is to be found in the equal length of the lateral toes, and the acuteness of the claws. Now, this structure of foot is also found, with a diminution hardly perceptible, in *Telophonus* ; but then the bill is lengthened, so as to give these birds, at the first glance, an appearance of being *Malaconoti*. This union of characters is just what we should expect in such birds as were to represent the bush-shrikes in

the circle of *Laniæ*: for, although the bill is moderately lengthened in *T. collaris* (fig. 120. b.), and remarkably so in *T. longirostris*\* (fig. 120. a.), still the culmen is regularly curved, and not abruptly hooked at the end, as in *Malaconotus*. We have no remaining doubt, in short, of the immediate union of *Telo-*

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*phonus* with the pre-eminently typical genus *Lanius*; this union being effected by the Corvine shrike in one division, and the *Teloph. leucogrammicus* in the other. The second type is *Nilus* (fig. 121.), at present composed but of one

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species: it has the bill much like that of a true shrike, but considerably attenuated; and the general organisation of the bird is weaker than in any other genus. This we

think is the tenuirostral type of the circle, if so, it will consequently stand between *Chætolemma* and *Falcunculus*. We have already shown in what respect this latter genus may be viewed as uniting the whole of the shrikes into one circular family; but as we have ventured so far as to trace out the smaller circle of *Laniæ*, the ornithologist may well inquire in what manner *Falcunculus* can be actually united to *Lanius*, seeing that its outward structure, no less than its scansorial habits, are so different. Now, this union is effected by a singular bird of Brazil, long bandied about (to translate an expressive French phrase) in systems, from the tanager family to the old genus *Lanius*, and then again to *Thamnophilus*: its structure was so peculiar, that some years ago we placed it as the type of a supposed genus, under the name of *Cyclaris*: a more minute analysis, however, of this sub-family, and more especially the recent

\* See Part V.

discovery of *Chætolemma* among the unexamined birds of our friend Mr. Burchell, has quite satisfied us that this is not one of the prominent types of the *Laniianæ*, but only an aberrant species of *Falcunculus*; we therefore cancel the name of *Cyclaris*, and propose for this bird the name of *Falcunculus Guianensis*. This is only one of the many instances wherein aberrant species have been mistaken for generic types. To these mistakes we are all liable, — for they can only be detected in a very advanced state of ornithological investigation, and we trust that the unscrupulous correction of our own errors, in this respect, will be a sufficient proof that, in cancelling very many of the supposed genera of others, we are actuated but by one motive, — that of the most perfect impartiality. It would be strange indeed, if any one, not possessed of divination, could determine the rank of a type before he has analysed the group of which it seems to form a part.

(15.) Having now sketched out the natural series in which the different divisions of shrikes appear to follow each other, let us pause to consider their analogies. On acutely surveying these groups, we find that nature still preserves, even under the form of the shrikes, a concealed resemblance to the primary orders of birds and the tribes of the perchers, as exhibited in the following table: —

<i>Tribes of Perchers.</i>	<i>Analogies.</i>	<i>Sub-Families of Shrikes.</i>
DENTIROSTRES.	{ Bill short, toothed; seize their prey by the foot.	} LANIANÆ.
CONIROSTRES.	{ Bill lengthened, compressed; feet strong; robust.	} THAMNOPHILINÆ.
SCANSORES.	Feet very short, hind toe lengthened.	DICRURINÆ.
TENUIROSTRES.	{ Bill weak, mouth smooth, feed only on soft substances.	} CEBLEPYRINÆ.
FISSIROSTRES.	Bill broad; feed upon the wing.	TYRANNINÆ.

Every one must have perceived the resemblance, both in form and habits, between the true shrikes and the falcons, and that *Lanius*, which is the first division or genus, is typical of the whole family. The skulking, thievish propensities of the bush-shrikes (*Thamnophilinæ*) and the jays (which belong to the *Coniostres*), in plundering

the nests and destroying the young of other birds, is thus explained ; since it is seen, by the above table, that these two groups mutually represent each other. The very great development of the tail in nearly all the Drongo shrikes (*Dicrurinae*), is also one of the most remarkable distinctions of gallinaceous birds, and of the scansorial tribe ; which latter is eminently characterised by the peculiar length of the hind toe, and by the tail feathers ending in fine points : all these characters are found also in the Drongos, but in no other shrikes. The soft and tender food of the caterpillar-catchers (*Ceblepyrinae*) evinces, that even the *Tenuirostres*,— a tribe living chiefly upon juices,— may be represented by insectivorous shrikes ; while the great depression of the bill, which has caused the tyrants (*Tyranninae*) to be confounded with the flycatchers, their constant habit of capturing their prey upon the wing, and the recorded fact \* that more than one species dives in the water, all remind us of the fissirostral swallows, and the aquatic order of *Natatores*.

(16.) Before dismissing our account of this family, we may here offer a few remarks upon the genera *Vanga* and *Platylophus*,—two modern genera that appear to enter within its limits, but whose true situation we suspect is very different. The name of *Vanga* was given by Buffon to a singular and very rare bird of Madagascar, as big as a jay, but with a long abruptly hooked bill like a *Thamnophilus*. It has been usual to place this genus, as well as that of *Platylophus*, in the same group ; but when we find that even M. Cuvier joins them with the large bush-shrikes, and several of the African *Malakonoti*, in his genus *Vanga*, we immediately perceive that a group so composed is entirely artificial. The resemblance between *Vanga destructor* and the smaller species of *Barrita*,— which latter are obviously crows,— is so perfect, that a suspicion has always existed in our minds that both belonged to the corvine family. As we have seen, in the genus *Falcunculus*, a New Holland shrike assume

\* Northern Zoology, vol. ii. p. 136.

all the manners of a woodpecker, may not *Vanga*, *Barrita*, &c., by analogy of reasoning, be true crows, disguised under the economy, and much of the structure, of shrikes? Again, does the *Vangæ* of New Holland and that of Madagascar belong to the same genus? or even to the same natural group? The only specimen of this latter bird, known to exist in collections, is in the Paris Museum, but in too injured a state to allow of this question being answered. On the other hand, we happen to know, from unquestionable testimony that the *Vanga destructor* of New Holland kills and eats small birds, in the same manner as the European species; and that it is actually called a butcher-bird by the colonists. Yet this, after all, seems to us only a relation of analogy, just as in the case of *Mniotilta*, which, although it climbs like a *Certhia*, is merely a representation of those scansorial birds, and truly belongs, by affinity, to the circle of the warblers. Since our last observations upon *Vanga* were published \*, we have been fortunate in procuring two or three species, which so connect the New Holland *Vangæ* with *Barrita*, that we no longer hesitate to place them all in the corvine family (*Corvidæ*); where, also, we now arrange *Platylophus*, since it certainly has a greater resemblance to *Vanga destructor* than to any of the soft-backed shrikes, or *Malaconoti*. This alteration does not, however, interfere with any thing we have said regarding *Platylophus* being a rasorial type: as such it remains, but merely fills that station in another circle. *Platylophus*, in short, has all the outward aspect of a jay, combined with that of a shrike; while its remarkable crest indicates to which of the primary types of nature we should refer it.

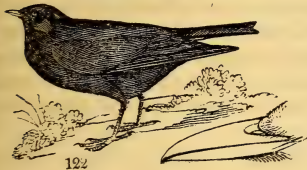
\* Northern Zoology, vol. ii. p. 124.



## CHAP. IV.

THE DENTIROSTRAL ORDER CONTINUED. — THE MERULIDÆ,  
OR THRUSHES.

(17.) THE family we are now to investigate is the most numerous, and consequently the most diversified, of the toothed-bill tribe. It is composed of birds inferior to the shrikes in that particular organisation adapted for rapacious habits; in other words, the bill is much less toothed: and yet, in all other respects, they are certainly superior in the scale of creation. Their feet are not only stronger, but are as much adapted for perching as for walking, for constant use in moving among trees as for habitual exercise upon the ground. The blackbird of Europe (*fig. 122.*), the fieldfare, and the whole of the typical thrushes (*Merulinæ*), are familiar examples of this perfection of structure, and will give the student a very good idea of the general size and appearance of the different genera in this division.



Like the corvine or crow family, — of which, in fact, they are but representatives, — these birds make their way upon the ground, in the air, and among trees, with equal facility; and this perfection

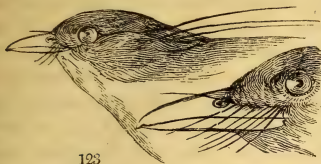
of foot is more or less prevalent throughout the family. The form of the bill, also, shows a superior adaptation for general purposes: the notch near the

point is, of course, much slighter than that of the shrikes; yet it is sufficient to enable the thrushes to retain a firm hold of their food, while the superior length of this member enables the bird not only to capture food that is exposed, but also such as lies beneath the surface of the ground. Thus we see the fieldfares and crows mutually assemble during autumn in large flocks, spread over new-ploughed fields, and traverse the ground in every direction in search of the same kind of food. The whole of the shrikes are restricted to animal sustenance, but the thrushes devour fruits quite as much as they do insects. Above all, the sweetness, compass, and versatility of their song renders them the most perfect of all the *Dentirostres*, or tooth-billed order.

(18.) The natural divisions of this family show in what manner the typical characters just intimated may be modified, according to the peculiar habits of each, and the analogies they bear to other tribes. These divisions, or subfamilies, are as follows:—1. The short-legged thrushes (*Brachypodinæ*, Sw.); 2. the orioles (*Oriolinæ*, Sw.); 3. the long-legged thrushes (*Cra-terapodinæ*, Sw.). These three form the aberrant circle. The true thrushes (*Merulinæ*, Sw.) compose the typical group; and the ant-thrushes (*Myotherinæ*, Sw.) constitute the sub-typical. Our present limits will not allow of so full an exposition of these groups as the scientific ornithologist might probably desire; but he will find their peculiarities and relations, both of analogy and affinity, amply discussed in the ornithological volume of the Northern Zoology. We shall, however, introduce in the following pages some additional remarks of a popular nature.

(19.) The short-legged thrushes (*Brachypodinæ*), as being that division which connects this family with the shrikes, naturally claims our first attention. This union appears effected by the genus *Trichophorus*, or bristle-necked thrushes which pass almost immediately into the Drongo shrikes. These birds are peculiar to

the hot latitudes of Western Africa and Oriental India; and have derived their name from three or four very



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long bristles, which spring from the back of the neck or from the nape (*fig. 123*). Although these appendages are very well defined, and nearly three times

the length of the surrounding feathers, they are yet so delicate as frequently to have escaped the scientific eye; hence many of the species have been overlooked. It is probable that these curious birds, like the Drongos, capture insects upon the wing; for although their tail is not forked, yet the bristles round the bill are even longer and more rigid than those of the generality of fly-catchers. The two groups further resemble each other in the shortness of the feet and the length of the hind toe. The next genus has been named *Phyllostrephus*, from one of the species, according to Le Vaillant, loving to shelter and hunt among heaps of dead leaves. We know, as yet, but of two, and these are from the African continent: the long straight bill of these birds is continued to the genus *Micropus*, Sw., but we now have a shortness of foot so remarkable that the tarsus is not even as long as the hind claw. Nature seems to have been very sparing of all these forms, since of *Micropus* also we know at present but of four examples. On reaching the typical genus *Brachypus*, we have a perfect and a most interesting assemblage of types, the five *subgenera* exhibiting a beautiful illustration of the five genera composing the entire circle. The pretty little *Iōra scapularis* of Dr. Horsfield, one of the most familiar birds of Java, connects *Micropus* with *Brachypus*, since it has the bill of the first and the toes of the last. The plumage is bright, and the feathers on the rump and back so long and soft, that

when raised they resemble a round puff-ball. To these succeed the true genus *Brachypus*, which are also gaily coloured birds, thickly clothed with long soft feathers, and with a wide mouth. The bill is short, and being nearly smooth, would seem to indicate their food to be chiefly vegetable; but nothing is known of their economy. Nature, however, points out one of their analogies by clothing two species nearly in the plumage of orioles. But still more beautiful than these are the green and blue birds, forming the next genus, *Chloropsis*, which seem intended to represent the splendid-coloured ant-thrushes (*Pittæ*); both groups, in fact, are confined to the tropical regions of India. These pitta-coloured birds lead us to the crested group of *Brachypus*, now named *Hæmatornis*, while the fifth subgenus, *Andropadus*, completes the series, by representing the bristle-necked thrushes. The whole of this group is confined to the tropical latitudes of the old world, nor is there any European bird wherewith to compare them. Our materials for understanding their economy are few and meagre. The information given by Dr. Horsfield respecting the *Iora scapularis* seems to apply in a great measure to others of this genus noticed by Le Vaillant. "It is a bird," says the Doctor, "of social habits, and resorts to the vicinity of human habitations; indeed, it appears to have retired from the forests, and established itself in the trees and hedges which surround the villages and plantations. Its wings do not enable it to fly very far, but it shows itself by short and frequent flights between the trees and branches."\* On referring to the collection of drawings formed by the late General Hardwicke, we find most of the species of *Hæmatornis* are known in India by the name of *Boulbul*, where they are kept in cages, thus disproving the assertion so frequently made, not only by poets, but naturalists, that this name is given in the East to the European nightingale: a facility in domesticating any bird or animal is an indirect proof that there exists a certain degree of

\* Zoological Researches in Java.

sociality to man, which other tribes do not possess. This very sociability, in fact, is one of the most remarkable peculiarities in this genus, and in the *Importan* (*Andropadus familiaris*, Sw.\*) is carried to such an extreme, that Le Vaillant seems to have dreaded meeting this bird, from its keeping him company in a day's shooting, and diverting his attention from other birds; hence the name he bestows upon it. The last genus of short-legged thrushes (*Icteria*, Vieil.) at present consists but of two birds: one, the *Icteria polyglotta*, or yellow-breasted chat, of America; the other, a new species from India, which was once in the possession of Mr. Grey, of the British Museum. Wilson has given a highly interesting account of the first, clearly showing its affinity to *Andropadus*. It is equally attached to man, and would seem to surpass even the *Boulbuls* in the strength and versatility of its song. All these conterminous groups, moreover, have a singular habit of turning over in the air during flight, something in the manner of a tumbler pigeon, and at other times of throwing themselves into strange and grotesque attitudes, just as their representatives in the circles of *Fluvicolinæ* and *Saxicolinæ*. -

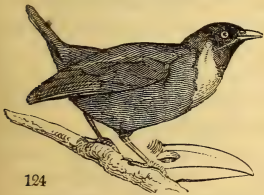
(20.) From the short-legged thrushes we pass to the orioles (*Oriolinæ*, Sw.) by such birds, in all probability, as the palm-thrush of Buffon, and the genus *Dulas* of M. Vieillot. The golden oriole of Europe (*Oriolus galbula*), an occasional visiter to these islands, is a well known and beautiful example of this group, distinguished by nearly all the species, being of a rich yellow or golden colour. They live in small flocks, fly well, and frequent high trees, among the foliage of which they seek for caterpillars, soft insects, and fruits. In the last group we took a final leave of the fly-catching birds, having the mouth provided with bristles, and we accordingly find in this that the rictus is smooth. The rump feathers of the orioles are formed something in the same manner as those of the caterpillar-catchers

\* Le Vaillant, Oiseaux d'Afrique, iii. pl. 106. f. 2.

among the shrikes, which they further resemble in the nature of their food ; in both groups the head is frequently black. Their analogy, in short, is direct and perfect. To this division belongs the magnificent *Sericulus chrysocephalus*, Sw., or regent oriole, of New South Wales, and the no less splendid *Oriolus paradiseus*, Tem. or golden bird of paradise, from New Guinea. Near to these we place the lovely *Irena puella*, Horsf. or fairy oriole, although it shows a considerable deviation in the colours, being blue and black instead of yellow. Of all these extra-European forms we know nothing but their skins ; and even of the common European species a great deal is yet to be learned. The European oriole is said to build a long purse-shaped pendulous nest, hanging from the high branches of trees, in the same way as those of the American hangnests. But although we lived several years in Italy, where these birds are common, we never were able to procure or to see its nest.

(21.) We are prepared for the *Crateropodinæ*, or long-legged thrushes, by the regent oriole, just mentioned, which differs from its congeners by the superior size and length of its legs. These birds, notwithstanding the confusion introduced among them by M. Temminck and others, are separated from all the *Brachipodinæ* both by economy and structure. Their general dimensions are much larger, and their feet are of a size and strength far exceeding those of any other in the whole family. From the shortness of their wings they fly with much difficulty, and then only for short distances, retreating among thickets of reeds, and other aquatic plants, to which they cling. They show a singular partiality for places in the vicinity of water, and their notes are particularly loud and disagreeable. The colour of the plumage in all the species is sombre ; it is long, lax, and soft, particularly the tail feathers, which are generally broad and much rounded. As these birds perch so much among reeds, the strength thrown into their feet is not surprising ; since, to retain a firm hold on such a slippery and awkward support

the legs must be capable of taking a wide grasp, and the claws sufficiently sharp to retain a hold of the smooth stems. Now this is actually the structure seen in all the typical species. The bill is either long, as in *Pomatorhinus*, Horsf. ; moderate, as in *Crateropus*, Sw. ; or short, as in *Timalia*, Horsf. ; but in all cases it is very much compressed, entire, or very imperfectly notched, and of a peculiarly hard and horny appearance. The whole group is so little known, that we know not yet which are the principal types. The large species obviously lead to the mocking birds (for M. Temminck has actually mistaken one for the other), while the lesser so closely resemble *warblers*, that these also have been misplaced, by systematists, among the *Sylviadæ*. The *Timalia thoracica*, of India (fig. 124.), erroneously referred by Temminck to the



genus *Pitta*\*, is merely the representative of the short-tailed ant-thrushes in this group.

(22.) On the union of the three foregoing divisions into one circular group we need not dwell,

since the fact has been unknowingly admitted by two ornithologists, and this in a very curious way. After long consideration between the publication of the *name* of the group and its *characters*, M. Temminck unites in his genus *Ixos* all those thrushes which have a bill shorter than usual ; thus embracing the greatest part of our *Brachypodinæ*, and nearly the whole of the *Crateropodinæ* : in this he has been followed by Mr. Vigors, in the systematic list of birds annexed to the Life of Sir Stamford Raffles ; the characters by which these two groups are so remarkably distinguished — namely, their totally different economy, and the opposite construction of their feet — having been either overlooked, and viewed as of little importance by these gentlemen. The truth, in

\* *Pitta thoracica*, Pl. Col.

fact, appears to be, that the aberrant genera of the two groups approximate so closely that we might almost suspect *Icteria* formed part of the *Crateropodinae*, did we not believe that there is still another form to be discovered, which would unite the two subfamilies even more closely. The genus *Ixos*, after all, may be continued in artificial systems, but cannot be adopted in natural classification ; since it includes genera long before defined ; and unites, under one name, birds which actually belong to different families.

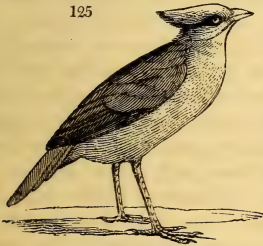
(23.) Quitting the aberrant circle, we enter among the true thrushes (*Merulinae*, Sw.), exhibiting the typical perfection of the whole family. Our preceding remarks will tender it unnecessary to repeat the leading distinctions of these birds ; and they are fully illustrated by our blackbird, throstle, and fieldfare : these, by their pointed wings and even tail, constitute one of the principal divisions (*Merula* R.) ; another includes the mocking-birds (*Orpheus*) ; a third, the rock-thrushes (*Petrocincla*) ; and a fourth is probably represented by the African genus *Chætops*. If the perfection of the thrushes depended on the powers of their voice, the American mocking-bird would stand unrivalled : it is, indeed, the Orpheus of the feathered tribes ; and has found an historian in Wilson, at once faithful and poetic. The true thrushes (*Merula*), like all other groups pre-eminently typical, are dispersed over all parts of the world ; but the mocking-birds (*Orpheus*) are found only in America. Some of the species so nearly approach the long-legged thrushes (*Crateropodinae*) that the junction of the two groups becomes unquestionable.

(24.) The rock-thrushes open a passage to the next division (*Myotherinae* Sw.), comprehending a large assemblage of birds found only in the tropics, where they live chiefly upon ants. As these are to be searched for upon the ground, we accordingly find the legs very much developed, and much more adapted, in their general structure, for walking than for perching ; the wings, as being little used, are feeble ; and the tail sometimes so short



as to appear almost cut off. As the natural arrangement of this division is much better understood than that of the last, we shall here enumerate the several types, or genera. 1. *Myophonus*. 2. *Cinclus*. 3. *Dasycephala*. 4. *Myothera*. 5. *Pitta*. The first may be denominated fowl-thrushes, since they are the largest in the whole family; and the neck feathers of the typical species, like those of gallinaceous birds, are pointed, and very glossy. We know at present but of three or four species; but several others, departing somewhat from the type, appear to exist: they have hitherto been found only in India. The next genus, *Pitta*, is one of remarkable beauty: they have the gradually curved bill of the true thrushes, but much stronger; the predominant colour of their plumage is green; the sides of the head and wings being generally variegated with

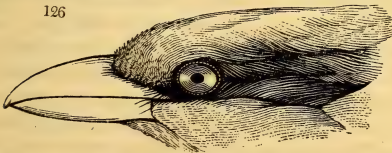
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vivid blue: some species have a hood of black; and all are confined to New Holland and the neighbouring isles of the Indian seas. America, indeed, presents us with a representation of these in the subgenera *Grallaria* Vieil., and *Chæmeza*, Vig.; but the species are very few, and

they are coloured in the homely hues of ordinary thrushes. To this group, as a subgenus, we refer *Chlorisoma* (fig. 125.), called by some writers by the barbarous and unmeaning name of *Kitta*! The bill (fig. 126.),

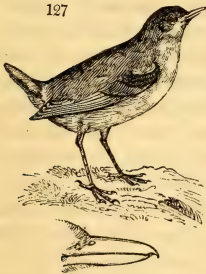
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is clearly that of a thrush, while the legs place it among

the *Myotherinæ*, of which it seems to be the rasorial subgenus, both on account of its size, its crest, and its affinity to *Myophonus*: there are two or three species, all natives of India. The genus *Myothera*, on the other hand, chiefly restricted to tropical America, and comprises numerous species of a small size, clothed in dark colours, but prettily variegated with white: although distinctly separated from the oriental group by their abruptly hooked and strongly toothed bill, they are yet so intimately allied to the small bush-shrikes (*Thamnophilinæ*), that it is almost impossible to draw a distinction between them: to this point, however, we shall presently return. Of all the tribes of insects which swarm in the tropics the ants are the most numerous; they are the universal devastators, and in the dry and overgrown forests of the interior the traveller can scarcely proceed five paces without treading upon their nests. To keep these myriads within due limits, a wise Providence has called into existence the ant-thrushes (*fig. 127.*), and has given to them this particular food. Both are proportionate in their geographic

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range; for beyond the tropical latitudes the ants suddenly decrease, and their enemies, the *Myotheræ*, totally disappear. As a general distinction by which this family may be known from the bush-shrikes, we may mention the difference in the feet — the structure of one being adapted for walking, while that of the other is more suited for perching. The ant-

thrushes are very locally distributed; for, although the group is tropical, we frequently found that a particular species, very common in one forest, was replaced in another by a second; while a third locality in the same district would present us with still another kind, different from those we had previously found. Cayenne and

Surinam, in like manner, furnish us with many species totally unknown in the forests of Brazil.

(25.) The fourth genus of this division is one of peculiar interest; we have named it *Dasycephala*, from the forehead and crown being defended by very stiff bristly feathers. Unfortunately we are totally ignorant for what purpose this singular defence is given; but, if we may be allowed to conjecture, the habits of the bird probably may be terrestrial; and, as its bill is sufficiently strong to penetrate beneath the surface of an ant's nest, the bristles, in such a case, would be an admirable defence for the nostrils, mouth, and eyes, against the attacks of the puny inhabitants. However this may be, *Dasycephala* is one of the most distinct types among the ant-thrushes, and is clearly connected to *Myothera* by the white-crested manakin of the old authors.

(26.) The water-ousels, placed in the genus *Cinclus*, constitute the fifth and last genus. Did we not know the peculiar habits of these semi-aquatic birds, ornithologists would have felt no hesitation in classing them with the *Myothera*: in external appearance they are chiefly distinguished from the American ant-thrushes by a more compressed bill, the notch being nearly evanescent, and the frontal feathers very much advanced. It was long believed that the only species in existence was that common to Europe and Britain: more recently M. Temminck has described a second, from Asia; and latterly we have ascertained two others, one inhabiting America\*, the other, India.†

(27.) The five divisions, or genera, of the *Myotherinæ* having been, as we conceive, now discovered, let us pause a while to contemplate their analogies, and to see how far the principle we have promulgated — that nature typifies all her higher groups in a single family, and even in a single genus — is borne out in this instance. In the first place, let us compare the various groups of the ant-thrushes (*Myotherinæ*), as here dis-

\* Northern Zoology, vol. ii. p. 173.

† Id. ibid. p. 174.

tributed, with the first and great divisions of birds into orders.

Orders of Birds.	Analogies.	Genera of MYOTHERINÆ.
RAPTORES.	{ Upper mandible abruptly hooked and furnished with a tooth more or less prominent.	} <i>Myothera</i> .
INSESSORES.	{ Bill, in the typical groups, gradually curved, the tooth obsolete.	} <i>Pitta</i> .
RASORES.	{ Bill more or less entire; wings short, convex; feet very strong, and formed for walking.	} <i>Myophonus</i> .
GRALLATORES.	{ Bill straight, or somewhat inclining upwards; frontal feathers advancing very far over the base of the bill.	} <i>Cinclus</i> .
NATATORES.	Feet partially syndactyle.	<i>Dasycephala</i> .

(28.) The two first analogies on this table, or those between the *Raptores* and *Myothera*, and between the *Insessores* and *Pitta*, require no illustration, since the bills are modelled on the same plan in each. The *Rasores*, or the gallinaceous birds, are the largest in existence; as they live upon the ground, their feet are very strong; and their wings, not being much used, are short: now all these are characteristics of the genus *Myophonus*; both these analogous groups, in fact, have a strong, but an entire, bill; the most typical examples among the *Rasores* (as the pheasants, fowls, peacocks, &c.) have the feathers on the neck of a pointed form, and richly glossed with metallic colours: *Myophonus* is the only genus of its family which puts on these peculiarities. The striking representation of the wading birds, given in *Cinclus*, is palpable to the most indifferent observer: it is, perhaps, one of the most beautiful analogies in creation; while that between the swimming order of *Natatores* and *Dasycephala* is shown in the partial union of the toes.

(29.) By comparing the ant-thrushes with the five tribes of perching birds (*Insessores*), we shall get explanations on several other parts of their structure.

Tribes of Insessores.	Analogies.	Genera.
DENTIROSTRES.	Bill abruptly hooked.	<i>Myothera</i> .
CONIROSTRES.	Bill more conic, the notch small.	<i>Pitta</i> .
SCANSORES.	{ Bill entire; shafts of the tail feathers ending in naked points.	} <i>Myophonus</i> .

Tribes of Insessores.	Analogies.	Genera.
TENUIROSTRES.	{ Bill slender; almost or perfectly en- tire.	} <i>Cinclus</i> .
FISSIROSTRES.	{ Base of the bill considerably de- pressed.	} <i>Dasycephala</i> .

We here have an explanation why the tooth of the bill in *Myothera* is so like that of a falcon in miniature, since one group represents the other. The large conic-billed *Pittæ* were thought by Linnæus and his followers so much to resemble the corvine family, that they now actually stand in their systems as “short-tailed crows.” The analogy between the *Scansores* and *Myophonus* is particularly beautiful. No two tribes, to all appearance, can be more unlike each other than the gallinaceous and the climbing birds; yet here we have a genus unconnected with either, yet presenting three of their most prominent distinctions, viz.: the strong entire bill and robust walking feet of the *Rasores*, united to the aculeated tail of the *Scansores*; this latter structure, moreover, is found in no other known bird belonging to the family of *Myotherinæ*. The water-ousels (*Cinclus*) and the *Tenuirostres* have the most slender, defenceless bills in their respective groups: that of the British species inclines upwards; so does that of *Trochilus recurvirostres*, and several of the waders. Lastly, *Dasycephala* represents the flat-billed swallow, or fissirostral tribe, by being the only genus in its family where the base of the bill is considerably depressed.

(30.) From the tribes of perchers we pass to the families of the *Dentirostres*, or tooth-billed birds, with which we will now compare the genera of ant-thrushes.

Families of the Dentirostres.	Analogies.	Genera.
LANIADÆ.	{ Bill abruptly hooked; the tooth pro- minent.	} <i>Myothera</i> .
MERULIDÆ.	{ Bill gradually bent; the tooth obso- lete.	} <i>Pitta</i> .
YLVIADÆ.	{ Analogous to the Scansores, and con- sequently to	} <i>Myophonus</i> .
AMPLIDÆ.	{ Rictus smooth; feed only upon soft substances.	} <i>Cinclus</i> .
TODIDÆ.	{ Bill lengthened, base depressed; feet partially syndactyle.	} <i>Dasycephala</i> .

The first analogy (for so we shall at present term it) between the shrikes (*Laniadæ*) and the American ant-thrushes (*Myotheræ*) is so perfect, that MM. Cuvier, Temminck, Spix, &c. have blended one with the other; while the true thrushes (*Merulidæ*) and the Oriental *Pittæ* are still, in many systems, included in the same genus. The analogies between the three next, or the aberrant groups, as is universally the case, are more remote; and it is only surprising that where groups are so very dissimilar there can be found any tangible and definite points of resemblance.

(31.) By comparing the genera of the *Myotherinæ* with the genera of the *Thamnophilinæ*, or bush-shrikes, the accuracy of both will be severely tested.

Typical Genera of Bush Shrikes, THAMNOPHILINÆ.	Analogies.	Typical genera of Ant-thrushes, MYOTHERINÆ.
<i>Malaconotus.</i>	{ Plumage bright; bill more or less gradually curved: inhabit the old world.	} <i>Pitta.</i>
<i>Thamnophilus.</i>	{ Plumage dark, spotted, or banded; bill abruptly hooked; inhabit the new world.	} <i>Myothera.</i>
<i>Prionops.</i>	{ Bill lengthened; head defended by setaceous frontal feathers.	} <i>Dasycephala.</i>
Not discovered?	* * * *	<i>Cinclus.</i>
<i>Platylophus.</i>	{ Bill lengthened, abruptly hooked; wings broad, rounded, secondary quills and tail feathers ending in fine points.	} <i>Myophonus.</i>

The remarkable resemblance between the two first groups in each column, in structure, colour, and country, is very striking; while that which makes *Prionops* a representation of *Dasycephala* is equally complete. Regarding the fourth, or tenuirostral, type of the bush-shrikes, we do not feel sure that it has been discovered; for although our suspicions point to the genus *Colurisoma*, still we choose, for the present, to leave the question undetermined: finally, the analogy of *Myophonus* to *Platylophus*, as rasorial types at least, admits of no doubt.

(32.) The last test to which we shall bring our arrangement of the ant-thrushes, is by comparing it

with the principal divisions or subfamilies of the shrikes (*Laniadæ*).

Subfamilies of the LANIADÆ.	Analogies.	Genera of the MYOTHORINÆ.
<i>Lanianæ</i> .	Bill short, curved from the base.	<i>Pitta</i> .
<i>Thamnophilinæ</i> .	Bill long, curved only at the end.	<i>Myothera</i> .
<i>Dicrurinæ</i> .	{ Hind toe and claw lengthened; tail ending in slender points; mouth strongly bristled.	} <i>Myophonus</i> .
<i>Ceblepyrinæ</i> .	{ Plumage particularly soft; mouth smooth.	} <i>Cinclus</i> .
<i>Tyranninæ</i> .	{ Base of the bill depressed, the tip abruptly hooked; mouth bristled.	} <i>Dasycephala</i> .

The value of this last table is twofold; for not only does it demonstrate the natural series of the *Myotherinæ*, but likewise that of the *Laniadæ*, or shrike family. The speculative theory, therefore, about the *Thamnophilinæ* being that *aberrant* group which connects the shrikes with the thrushes — built, as it was, upon a mere supposition — must be given up. How, then, it may be asked, can we reconcile this circular succession of affinities with the indisputable fact, that the *Thamnophilinæ* blend so insensibly into the *Myotherinæ* that no ornithologist can separate them? Our reply is, that in proportion to the smallness of any circular group, so do its two typical divisions show a constant tendency to unite with the two corresponding groups in the *next* circle; and that this tendency in groups, where the species are particularly numerous, is carried to such an extreme that a union is actually effected. Did our space allow of the digression, we could demonstrate this proposition still further in regard to the *Sylviadæ*, but we now cite *this* family as an absolute demonstration of what we have elsewhere stated as one of the properties of the same principle of natural system.

(33.) Before taking leave of the *Merulidæ*, their analogies deserve particular consideration; since nothing is more calculated to impress us with the harmonies of creation, than to contemplate the various modes by which nature unfolds her types and symbols. Let

us first look to the five principal divisions of the thrushes, and see in what manner they represent the primary orders of birds.

Orders of Birds.	Analogies.	Subfamilies of Thrushes.
INSESSORES.	{ Feet formed both for perching and walking; omnivorous	} <i>Merulinæ</i> .
RAPTORES.	{ Bill with a prominent tooth; insectivorous.	} <i>Myotherinæ</i> .
NATATORES.	Feet remarkably short.	<i>Brachypodinæ</i> .
GRALLATORES.	{ Wings long, pointed; tail short; feed on soft substances.	} <i>Oriolinæ</i> .
RASORES.	{ Bill horny, hard, generally entire; feet very strong.	} <i>Crateropodinæ</i> .

In this, as in all our preceding tables, each of the two columns form their own circle of affinity, the last group passing into the first, as in the instance of the *Crateropodinæ*, or long-legged thrushes, and the *Merulinæ*, or true thrushes. We thus have the following representations. The order of perching birds (*Insessores*), and the *Merulinæ*, are the most perfectly constructed in their respective groups, although the tooth of their bill is small and imperfect. This character, however, is very conspicuous in the rapacious order (*Raptores*), and in the division of ant-thrushes, both living entirely upon animal substances. The shortest footed birds are found in the swimming order (*Natatores*), and this also is the peculiar characteristic of the short-legged thrushes (*Brachypodinæ*), and is that by which they are separated from all their congeners. The orioles, living only upon very soft food, have the mouth particularly smooth, and thus typify the *Grallatores*, or wading order, whose food is precisely of this description. The analogy between the *gallinaceous* order and long-legged thrushes (*Crateropodinæ*), is particularly beautiful: "the short convex wings; the broad spreading tail; great heaviness in flight; a size superior to all others in their respective circles, are the typical distinctions of both: even the nostrils are formed on the same principle; the membrane by which the aperture is defended, and which, in other birds, is soft and pliable,



in these assumes the appearance of a hard scale, as if covered by a prolongation of the horny substance of the beak. The loud, harsh, and disagreeable notes of both groups, is another singular point of resemblance which almost completes the picture." \*

(34.) By comparing this family with the tribes of the perchers (*Insectores*), we shall gain an explanation of several other peculiarities which are not developed by the last table.

Tribes of Perchers.	<i>Analogies.</i>	Subfamilies of Thrushes.
CONIROSTRES.	{ Wings lengthened; bill gradually arched, the tip slightly notched.	} <i>Merulinæ.</i>
DENTIROSTRES.	{ Wings rounded; bill toothed, and abruptly hooked.	} <i>Myotherinæ.</i>
FISSIROSTRES.	{ Feet very short; mouth bristled; insectivorous.	} <i>Brachypodinæ.</i>
TENUIROSTRES.	{ Feet short; mouth smooth; nectar-ivorous or frugivorous.	} <i>Oriolinæ.</i>
SCANSORES.	{ Claws acute, formed for clinging to vegetables.	} <i>Crateropodinæ.</i>

(35.) By this table, the analogy of the orioles, scarcely perceived when viewed in direct reference to the *Grallatores*, are brought much more forward. These birds, with the whole of the *Tenuirostres*, or honey-sucking tribe, are remarkable for the soft and delicate nature of their food; and both, in unison with such habits, are destitute of bristles to defend the sides of their mouth from injury. The humming-birds sip the nectar of flowers, while the orioles feed upon the fruits. The ornithologist may have remarked that some peculiar habits of the long-legged thrushes (*Crateropodinæ*), could not be explained in the last table, by their direct analogy to the gallinaceous order (*Rasores*), the latter living in plains, and seldom perching, whereas the former are scarcely ever seen upon the ground; but this is at once illustrated by their relation to the climbing-birds (*Scansores*), both groups being, in different degrees, scansorial, and living almost entirely among the upright stems of vegetables.

\* Northern Zoology, vol. ii. p. 163.

(36.) By comparing the family of the thrushes with that of the shrikes, we shall see with what beautiful regularity nature has proceeded in typifying one in the other; each contains five divisions, or subfamilies, mutually represented in the following manner:—

Subfamilies of LANIADÆ.	<i>Analogies.</i>	Subfamilies of MERULIDÆ.
<i>Lanianæ.</i>	Bill gradually arched.	<i>Merulinæ.</i>
<i>Thamnophilinæ.</i>	Bill straight, abruptly hooked.	<i>Myotherinæ.</i>
<i>Dicrurinæ.</i>	Feet short; hind toe lengthened.	<i>Brachypodinæ.</i>
<i>Ceblepyrinæ.</i>	} Mouth smooth; rump feathers thick, subspinous, or rigid.	} <i>Oriolinæ.</i>
<i>Tyranninæ.</i>		

The first analogy of this table, or that between the true shrikes (*Lanianæ*) and the typical thrushes (*Merulinæ*), at first sight appears not only remote, but even questionable: it is, nevertheless, one of the most extraordinary and most beautiful throughout creation. Let us take a typical example of each group, and compare their form, colour, habits, and economy, as described by authors who have given us their unbiassed testimony, totally ignorant of the use we should make of it. One of these birds is the *Lanius Carolinensis* of Wilson, the other the American mock-bird (*Orpheus Polyglottus* Sw.). The words in *Italics* alone denote their respective differences.

LANIUS CAROLINENSIS Wilson.

Loggerheaded Shrike.

Bill arched from the base, *short*; mouth bearded.

Colour above grey, beneath white; *ears black*; wings obliquely rounded, black, the quills with a white band at their base; tail black, graduated, tipped with white.

“Makes its nest in a detached bush in the manner of the mocking-birds.” — *Wilson, American Ornithology*, vol. iii. p. 57.

Feeds on crickets and grasshoppers. — *Wilson*, p. 57.

The cinereous and red-backed shrikes imitate the notes of other birds. — *Latham, General History*, vol. ii. p. 12.

ORPHEUS POLYGLOTTUS Sw.

American Mocking-bird.

Bill arched from the base, *longer*; mouth bearded.

Colour above grey, beneath white; wings obliquely rounded; wings and tail of the same structure and colour as those of *Lanius Carolinensis*.

“Feeds upon winged insects, fruits, and grasshoppers. — *Wilson*.”

The mocking-bird is well known to imitate the notes of all others.

LANIUS CAROLINENSIS, Wilson.  
Loggerheaded Shrike.

Shrikes and rapacious birds always disgorge the undigested parts of their food in round pellets.

“In Georgia, according to Mr. Abbot, the Carolina shrike is known by the name of bigheaded mocking-bird.” — *Latham, General History*, vol. ii. p. 7.

ORPHEUS POLYGLOTTUS, Sw.  
American Mocking-bird.

Mr. Bartrum writes, “I have observed that the mocking-bird ejects from his stomach, through his mouth, the hard kernels of berries, &c., retaining the pulpy part.” — *Wilson*, vol. ii. p. 25.

(37.) It seems impossible to conceive in what way this most extraordinary resemblance can be rendered more complete. Here are two birds, — typical examples of two distinct groups, — birds of the same size, — clothed in nearly the same coloured plumage, — seeking the same kind of food, — agreeing in the structure of their wings and tail (almost in their feet), — building the same kind of nest, and in similar situations, — imitating the notes of other birds, — ejecting their un-serviceable food in the same manner, — and, finally, called almost by the same name, — and yet totally distinct in real affinity. Well may we exclaim, “Wonderful are THY works, O Lord! for they are full of wisdom.” If such astonishing relations become apparent on gaining an imperfect glimpse of HIS system, how inconceivably sublime must be the whole! A glance at the bills of these two birds is sufficient to show their real distinctions; yet, were this organ concealed, few, even among naturalists, would detect their difference.

(38.) But to proceed to the other comparisons. The analogy between the bush-shrikes (*Thamnophilinæ*) and the ant-thrushes (*Myotherinæ*), as we have already seen, blends into an absolute affinity; while the two families are also united by the drongo shrikes (*Dicrurianæ*), passing into the short-legged thrushes (*Brachypodinæ*), in the manner we have before explained. The resemblance between the orioles (*Oriolinæ*) and the caterpillar-catching shrikes (*Ceblepyrinæ*) is to the full as strong. Both have long but obliquely rounded wings — short feet and tails — a bill broad at the base

and compressed on the sides—and the mouth destitute of stiff bristles; but, what is more singular, the rump feathers in both are of precisely the same construction. It will be remembered that these, in the caterpillar-catchers, are particularly thick set, and that, when pressed against by the hand, a sensation is given of being pricked, just as if the shafts of the feathers beneath the surface terminated in little sharp points. This supposition, although it has been urged as a fact by Cuvier, is entirely erroneous. These feathers have the shafts very thick at the base, but towards the middle they suddenly become very slender: by being pressed against they bend into a sharp angle, the thicker part of the shafts resisting, and the thinner yielding to the pressure; the angle thus formed, is, in fact, the prickle which all ornithologists have believed in. Now, although the rump feathers of the orioles do not possess this property in the same degree, the shaft is formed on the same principle: it is thick at the base, but suddenly becomes very fine; and if gently pressed, the hand feels a prickly resistance: the same character belongs to the beautiful *Irena Puella*, a bird classed by the Linnæan naturalists with the rollers, and by some of the moderns with the drongo shrikes. Dr. Horsfield, therefore, is perfectly correct in assimilating it to this group. The last analogy is that between the tyrant shrikes (*Tyranninæ*) and the long-legged thrushes (*Crateropodinæ*), which are thus brought into contact. As these two groups are the most remote, and both pass into different families, so their resemblance is more distant. Yet there are not wanting certain characters which they possess in common: the breadth of the tail is peculiarly conspicuous in both; the bristles round the mouth of the long-legged thrushes are more developed than in any other group of the family; another character which is common to the tyrants. It has been mentioned by Wilson, and we can confirm the fact from personal experience, that most of the tyrant fly-catchers constantly resort to the vicinity of water, into which they frequently dive. Now, this fact explains at once the

aquatic habits of the long-legged thrushes, a point which could not be elucidated by any of the tables we have already given. These two groups, in short, are the only ones, in their respective families, which habitually frequent such situations.

(39.) The last set of comparisons we shall bring forward is between the family of thrushes (*Merulidæ*), and the order of *Tenuirostres*, or honey-suckers, groups so very remote, and so distinct from each other, that we may almost feel surprise that any resemblances can be traced between them. Yet it becomes important to ascertain this, since several authors, on the belief that the subgenus *Chloropsis* has a brush-like tongue, have consequently considered it is a meliphagous group. The Paradise oriole likewise has been thought to form one of the true Paradise birds by so many, that we may suspect there is some foundation for these relations in nature; a glance at the following table will accordingly prove this to be the fact.

Subfamilies of Thrushes.	Analogies.	Families of <i>Tenuirostres</i> .
<i>Merulinae</i> . <i>Myotherinae</i> .	{ The most typical of their respective circles: wings in one strong and pointed, in the other feeble and rounded.	{ TROCHILIDÆ. CINNYRIDÆ.
<i>Brachypodinae</i> .	{ Feet short; hind toe lengthened; wings and tail rounded.	} MELIPHAGIDÆ.
<i>Oriolinae</i> .	{ Frontal feathers soft and velvet-like; rictus smooth; hind toe and tarsus of nearly equal length; frugivorous.	} PARADISIDÆ.
<i>Crateropodinae</i> .	{ Bill greatly compressed, curved, entire; tail lengthened, broad, graduated.	} PROMEROPIDÆ.

(40.) The resemblance between the two first groups in each column cannot be supposed very strong, if we look to form or structure, since scarcely any two birds can be more unlike than a thrush and a humming-bird. They agree, however, in feeding both upon vegetable and animal food, and further correspond in being the most typical of their several groups. Who that compares the beautifully-coloured *Pittæ* of India, particularly the *Pitta cyanura* Vieil., with the *Cinnyris Senec-*

*galensis*, — both clothed in the richest colours, and both crossed by brilliant violet lines on the throat, breast, and body, — but will be struck with the analogy? But these are faint when compared with those between the *Brachypodinae* and the *Meliphagidae*. It is here we get the true value of this table, since it shows the supposed affinity of *Chloropsis* to the honey-suckers (*Meliphagidae*), is merely a relation of analogy. The Paradise oriole, in like manner, typifies, in its own family, the true Paradise birds; while the peculiar hardness and compression of the bill in the two last groups, their long, soft, and graduated tails, and partiality for the vicinity of water, render their analogy almost unquestionable. It is, indeed, still a matter of doubt, whether the *Promerops Capensis* belongs to one or the other. These relations, however, from being less direct than several we have previously noticed, might be termed fanciful, had not naturalists, by mistaking them for true affinities, stamped them with an additional value, while each group is placed exactly in that station it holds in its own circle of affinity.

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## CHAP. V.

THE DENTIROSTRAL ORDER CONTINUED.—ON THE SYLVIADÆ, OR  
WARBLERS.

(41.) THE chief peculiarity which runs through this numerous family, is the very small size and delicate structure of its individuals. Excepting the humming-birds, we find among these elegant little creatures the smallest birds in creation. The diminutive golden-crests, the nightingale, the white throat, and the wood wren, are all well known examples of genuine warblers, familiar to the British naturalist. The groups of this extensive family, spread over all the habitable regions of the

globe, are destined to perform an important part in the economy of nature: to them appears intrusted the subjugation of those innumerable minute insects which lurk within the buds, the foliage, or the flowers of plants; and thus protected, escape that destruction from swallows, to which they are only exposed during flight. The diminutive size of such insects renders them unfit for the nourishment of the thrushes and the larger insectivorous birds, while their number and variety only become apparent when the boughs are shaken, and their retreat disturbed. How enormous, then, would be their multiplication, had not nature provided other races of beings to check their increase! No birds appear more perfectly adapted for this purpose than are the warblers. They appear among us, for the most part, on the first appearance of spring, when the insect world is called into life and activity, by the renewal of vegetation; and they depart towards autumn, when these minute depredators diminish, and when the services of their enemies are consequently no longer required. As different localities are assigned to different tribes of insects, so do we find a similar diversity of haunts among the various groups of warblers. The gold crests and wood warblers (*Sylvianæ*) confine themselves principally to the higher trees, where they search for winged<sup>d</sup> insects among the foliage; or capture them, like flycatchers, when attempting to escape. The reed warblers and the nightingales (*Philomelinæ*) haunt the vicinity of waters, or the more dense foliage of hedges, for insects peculiar to such situations. The stonechats (*Saxicolinæ*), on the contrary, prefer dry commons and wide extended plains, and feed on insects appropriated to these localities: while those which belong to humid and wet places are the particular food of the wagtails and titlarks (*Motacillinæ*): lastly, the *Parianæ*, or titmice, search with the greatest assiduity among the buds and tender shoots of trees, and thus destroy a host of hidden enemies, inimical to vegetation. The natural distribution of this family is thus marked by peculiarities of habit,

no less than by a variation of structure adapted to such habits.

(42.) But before we proceed further, let us exhibit the divisions just intimated in a more definite manner, in the following table of the subfamilies:—

Circles.	SYLVIADÆ, or Warblers.	Subfamilies.
1. <i>Typical.</i>	{ Bill very slender, compressed; lateral toes equal.	} SYLVIANÆ.
2. <i>Sub-typical.</i>	Bill and general structure more robust.	PHILOMELINÆ.
3. <i>Aberrant.</i>	{ Bill depressed at its base; legs length- ened; strong.	} SAXICOLINÆ.
	{ Claws lengthened, and but slightly cur- ved; live upon the ground.	} MOTACILLINÆ.
	{ Bill strong, almost entire; hinder toe and claw large.	} PARIANÆ.

As we shall subsequently touch upon the analogies resulting from this arrangement, we may at once proceed to notice the several divisions in more detail.

(43.) The *Motacillinæ*, or wagtails, form the most aberrant division of this group; they are particularly interesting from their various and almost complicated relations. They are a small group of purely insectivorous birds, very well exemplified by the few species so common in this and most other countries of Europe. They live almost entirely upon the ground, where alone they seek their food, which consists entirely of insects: damp meadows, and the sides of standing or running waters, are the favourite haunts of these birds, and they run with such celerity, that, in this respect, as well as in their general black and white plumage, they can only be compared to the plovers. We consider them, in fact, as collectively representing the tenuirostral type of the perchers, or, what is the same, the grallatorial type among birds. The different wagtails of England are of the most typical genera (*Motacilla* and *Budytes*). These are succeeded by a beautiful little group peculiar to India, named *Enicurus* (*fig. 128.*), nearly all of which have a remarkably forked tail, and are clothed in a plumage of pure white, variegated with deep black: next to these comes the genus *Anthus*, or titlarks, slender-



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shaped birds, having the plumage and long hinder toes of the true larks, but with the slender bills of a wagtail. This union of characters all ornithologists concur in viewing as a plain intimation of the mode in which the dentirostral tribe is united to that of the conirostral. *Anthus*, in fact, seems to be placed at the very extremity of the *Dentirostres*, just as the family of the *Alaudinæ*, or true larks, is in the circle of the *Conirostres*; in other words, they are not only analogous, but this analogy actually blends into an affinity. In addition to the four principal types or genera of the *Motacillinæ*, above enumerated, we have been fortunate in detecting what we consider to be the fifth or fissirostral type, long after we had expressed our firm conviction that type had not yet been detected. Hitherto none of the wagtails had been detected in America; but the recent researches in Chili have brought to light a most singular bird, long ago figured by Buffon, but which had been lost to our modern collections, until very lately. This is our *Lessonia erythronotus*, which at present stands as a solitary example of the fissirostral type of the *Motacillinæ*. This singular bird has the feet and long hind claw of *Anthus* and of *Motacilla*, between which we assign it a station. It is well known that the greater part of the *Motacillinæ* are perpetually moving their tails, and we shall now show how this character is continued to the next division.

(44.) We enter among the PARIANÆ, or tits, by the American genus *Seiurus*, which, as its name implies, is remarkable for the motion of its tail; one species (*Seiurus aquaticus*\* Sw.) frequents the sides of streams,

\* Northern Zoology vol. ii. pl. 43.

and runs upon the ground; while another (*S. aurocapillus* Sw.) is confined to damp woods, and runs along the low branches of trees.\* Here we have a change of economy, which plainly shows that nature has assumed a new form; and, as the habit of running along branches of trees is the chief faculty of the scansorial birds, or of their representatives, so we may suppose the group next in succession to the *Motacillinæ* would possess something of the same characters. Now these are displayed in the genus *Accentor*. We recollect hearing read, at the Linnæan Society, a very interesting notice on the manners of a specimen of this rare British bird, which was killed near one of the public buildings at Oxford; and every ornithologist must regret that this paper is not to be found in the society's transactions, since it brought to light one of those important and long concealed facts, which frequently decide the true station in nature of an entire group. The bird in question was seen to climb so adroitly round the steep abutments of the buildings, as to baffle for a considerable time the aim of the person who eventually shot it. We can also state, from our own personal observation, that the common hedge sparrow frequently hops along the whole length of a strong oblique branch, pecking into the crevices of the bark, so that the observer is instantly reminded of a scansorial creeper, or of a woodpecker.

(45.) The *Parianæ*, or titmice, may therefore be said commence with the genus *Accentor*, which stands at the confines of that group which contains the most scansorial warblers in this family. This group or subfamily is represented by the following genera: *Accentor*, *Parus*, *Sylvicola*, *Setophaga*, and *Trichas*. So many well-known examples of the titmice enrich our native fauna, that it would be superfluous to describe their habits; known, as they must be, to every observer. The short, stout, and nearly conic bills of these active little climbers, are admirably adapted for pecking into

\* Northern Zoology, vol. ii. pl. 227.

the bark of buds, and thus extracting the small insects that there lie concealed. Of the five types of form, or subgenera, proper to the genus *Parus*, that which we have formerly named *Parisoma*, is the connecting link to *Accentor*. It is one of those small birds of South Africa, figured, indeed, by Le Vaillant, but of which the greater part are known only by his plates: the four others are composed of the ordinary or typical titmice (*Parus*), the hangnest titmice (*Egithalus* Vig.), the Brazilian titmice (*Hylophilus* Tem.) and that excessively rare little bird forming Vieillot's genus *Ægithina*. *Parus* and *Egithalus* are distinguished by their conic, sharp-pointed, and entire bills; while the three aberrant types have this member notched; but in all five the feet (so constantly employed in the great exertion of climbing) are particularly strong and muscular; the hind toe, also—upon which all climbing birds depend so much for assistance—is large and powerful.

(46.) The discovery of the five subgenera of *Parus*, independent of the verification they afford by their perfect analogy to the correctness of the corresponding types of the genus *Sylvicola* subsequently detailed, is of much importance, since this discovery enables us to prove, beyond all reasonable doubt, that neither the long-tailed nor the bearded tits (*Parus caudatus* and *biarmicus*) are types either of genera or subgenera. We have already alluded to the station in which, after the most minute analysis, we have placed the *Parus biarmicus*\*, which is only an aberrant species of the restricted subgenus *Parus*, as the latter now stands: from this bird always living in the vicinity of water, it becomes that species



which represents the natatorial type; while, in the greatly developed tail of *Parus caudatus* (fig. 129.), it is easy to perceive another aberrant species, typifying the *Rasores*. We have repeatedly remarked that groups, pre-

\* Classification of Animals, pp. 270, 271.

eminently typical in their own circle, almost invariably present us with these variations in the form of their aberrant species. The restricted genus *Parus* is precisely of this description: it is the preeminent type of an entire subfamily; and hence, like *Corvus*, *Lanius*, *Sylvia*, and a great number of other genera, holding the same rank in their own circles, it contains a greater variety of modifications, in the form of its species, than genera which are not preeminently typical. The whole of the subgenera of *Parus* are distinguished from those of *Sylvicola*, by characters the most simple and beautiful. They all have that peculiar strength of foot so con-



spicuous in our native examples, and their wings are invariably rounded; that is to say, the first quill is short, and the second and third so graduated, that the fourth becomes the longest (*fig. 130. a*). The bill also is short and thick, generally more or less conic, and sometimes (as in the types) very strong: the upper mandible may be said to be entire, for in the only genus (*Parisoma*) which has the culmen arched, the notch is so small, that it may be termed obsolete. We are thus enabled to distinguish the whole from the neighbouring group we shall now enter upon.

(47.) The second division of the titmice forms our genus *Sylvicola*. This extensive group possesses peculiar interest, inasmuch as it exhibits, after the most minute analysis, a demonstration of those general laws of classification, which we consider the foundation of the natural system, and by which, as we conceive, the whole creation has been regulated. Without, however, anticipating conclusions before we have detailed facts, it will be necessary to premise, that the whole of the birds whose natural arrangement we shall now consider, with the exception of one group, are natives of North America; and that almost every fact we shall have occasion to mention, as illustrating their habits and economy, will be found recorded in the

pages of Wilson, one of the most watchful and most accurate observers of nature that has ever existed in any age or in any country.

(48.) The subgenera of this extensive genus are not only all known, but contain many striking examples, arranged under the following divisions:— 1. *Vermivora* Sw., the worm-eaters;— 2. *Sylvicola* Sw., the titmice-warblers;— 3. *Dumecola* Sw., the bush-warblers;— 4. *Zosterops* Vig., the white-eyed warblers;— 5. *Mniotilta* Vieil., the creeping warblers. The peculiarities of each, and their connection among themselves, will be now explained. Viewing these lesser groups collectively, we discover a strong peculiarity in the form of the wing (*fig. 130. b.*), which at once separates them from all the neighbouring groups. The first quill feather is invariably long, and is generally equal, or but very little inferior to the second and third. Whereas, in the five subgenera of the titmice (*Parus*), as already observed, the wings are as invariably rounded, and the first quill is not more than half the length of the third (*fig. 130. a.*): this is the easiest, as it is the best, mark of discrimination between the two groups.

(49.) The subgenus *Vermivora*, or worm-eaters, includes a few species peculiar to North America; by their pointed and entire bills, they give us a representation of the conic-billed titmice (*Egithalus* Vig.), and they represent, at the same time, the order *Coninostres* in their own circle. The difference between this group and *Egithalus* is sufficiently marked by the structure of the wings, for their bills are precisely alike. The worm-eating warblers, depend for locomotion more upon their wings than on their feet; hence we find, that the former are more adapted for flight, and that the latter are more slender and feeble than those of *Egithalus*. The peculiar manners of this group was first made known by Wilson; and although we defined it from its external characters many years ago, subsequent writers have still continued to confound the worm-eaters with the honey-sucking *Nectarinæ* of the

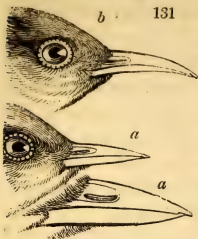
*Tenuirostral* race forming the genus *Dacnis* of M. Cuvier, but previously named *Nectarina* by Illiger. The subgenus *Sylvicola* is the second or typical division of the whole group. These are the true tit-warblers of America, so closely resembling the worm-eaters, that many writers have placed both in the same genus; they may, however, readily be detected by a slightly arched bill, notched near the end of the upper mandible. The slender structure of their feet, the pointed form of their wings, and the scattered, weak bristles of the mouth, suggest the idea that the mode of catching their prey must not be unlike that adopted by the true flycatchers, and such, accordingly, turns out to be the fact; they are, in short, lively, active, gaily coloured little birds, continually hunting after sedentary insects, and pursuing such as fly from bough to bough; their habits thus forming a singular union of those of the wood-warbler, the tits, and the flycatchers: so close, indeed, is this analogy, that Meyer has confounded them with the first, Linnæus and Buffon with the second, and even Wilson considers some as belonging to the third of these families. Nor was the great American ornithologist very far from the truth, since they actually pass into a subgenus, which certainly would stand in the old Linnæan group of *Muscicapa*.

(50.) In *Dumecola*, the third subgenus, we consequently find the bill no longer slender and compressed, as in *Sylvicola*, but decidedly more flattened; while the slender scattered hairs at the base become more rigid, lengthened, and directed forward in the manner of the true flycatchers. This subgenus is peculiar to tropical America; it is composed of those very small birds which seem to be half warblers and half flycatchers, having the feet more lengthened, the wings more pointed, the bill narrower and less depressed, and the sides more rounded, than the small tyrants (*Tyrannula*), already noticed. The *Dumecola ruficauda*, formerly cited as an example, is not, perhaps, a typical one, but rather the *Muscocapa Diops* of Temminck, which we have hitherto been

unable to examine. There are, however, several undescribed birds from Brazil now before us, which appear to belong to this group, all of which have the second quill very little longer than the first. This character of the wings seems to be the best we can at present depend upon. We have no doubt that when the small warblers and flycatchers of tropical America have been properly studied, this division will be augmented by many species, and the true type of the present subgenus clearly ascertained. Certain it is, that among the little birds now before us, there is, in three or four species, strong indication of that white circular ring round the eye, which is the leading distinction of *Zosterops*, the very next genus which, according to our views, succeeds *Dumecola* in the circle we are now investigating. We can never hope to ascertain the natural station of any being, or group of beings, in the great system of nature, so long as other groups, to which it seems to have a strong resemblance, remain uninvestigated. Now this is the case with *Dumecola*: many species seem to be as clearly, if not more, related to the genuine tyrants (*Tyranninæ*) than to the *Sylvicola*; and yet there are others which seem absolutely to annul the first of these relations. Hence it follows, that, before the true characters of these groups are known, the *Tyranninæ* must be analysed with the same degree of care as that which we have bestowed upon the *Sylvicolæ*. Until this is done, it may still remain a question whether *Setophaga* does not actually fill the station we have here assigned to *Dumecola*; so that these two groups, in fact would become transposed.

(51.) The subgenus *Zosterops* is the fourth type, and contains the white-eyed warblers. These little birds are chiefly confined to the Eastern hemisphere; but we have the drawing of one species not yet described, which is asserted to inhabit Cayenne. In this group, formed but of eight or ten species, we have the depressed bill of *Dumecola* joined to the more pointed shape of *Sylvicola*: and although the wings are of the same pointed form as in the last-named group, the whole

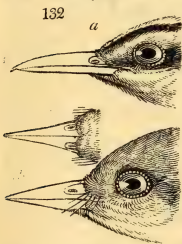
external structure of these birds separate them from all others : the legs are stout, and the hind claw sufficiently



lengthened to betray an indication of scansorial habits. In this member, and in the shape of the nostrils (*fig. 131. a* magnified), we trace a marked analogy to the honeysuckers (*Diceum* Cuv.): this analogy is so strong, that it has been mistaken for an affinity, since we have a true *Zosterops* under the complete disguise of a suctorial

creeper in the *Certhia borbonica* of authors (*b*).

(52.) *Mniotilta*, the fifth and last subgenus, remains to be illustrated. We have seen, in *Zosterops*, some indications of a climbing structure, and in one species a lengthened and very slender bill; these characters, although they by no means prepare us for the fifth type of *Sylvicola*, will render the transition to the *Mniotilta varia* Vieil., or black and white creeper of North America (*fig. 132. a*), less abrupt than it would otherwise



appear. This bird, in our systems, has shared the fate of numberless others, presenting a union of apparent contradictory characters. Although a scansorial bird, like several others in this family, its true affinities unquestionably lay with the *Sylvicolæ*: its bill, although somewhat lengthened, is notched, and formed on a similar model; so

also are its wings and tail; its plumage likewise is totally devoid of those colours so universal among the true scansorial creepers, *Certhiadæ*. But even admitting all this, it may be urged, in what manner has nature connected this bird with the *Vermivoræ*, or worm-eating warblers? for this affinity is absolutely necessary to complete the circle of the genus *Sylvicola*? In reply to this, we must direct the reader's attention to the peculiarly interesting eco-



nomy of the pine creeping warbler (*fig. 132. b*) as thus narrated by the ornithologist of America.

(53.) "The pine creeping warbler," says Wilson, "runs along the bark of the pines; sometimes alighting and feeding upon the ground, and almost always, when disturbed, flying up and clinging to the trunks of trees. They associate in flocks, and are easily known by their manner of rising from the ground, and alighting on the *body* of the tree: they also often glean among the topmost boughs of the pine trees, hanging head downwards like the titmouse; but, notwithstanding the habits of the bird, the tongue is slender, as in the warbler genus.\* Again: "The pine warbler has all the habits of a creeper, alighting on the trunk of the pine trees, running nimbly round them, and, according to Mr. Abbot, builds a pendulous nest." † Here, then, is a bird presenting as extraordinary a union of characters (in themselves apparently contradictory), as any in this class of animals. It climbs with all the facility of a scansorial creeper, yet, unlike that family, it is gregarious and builds a pendulous nest: it has the tongue of a warbler, but the habits of a *Vermivora* and a *Parus*. It frequently feeds upon the ground, in flocks, like the gallinaceous birds; but yet it ascends the highest trees, and hangs to the branches like a titmouse! Finally, the bill of the bird (*fig. 132. b*) (the two sexes are now before us) is precisely like that of *Vermivora*, equally entire; but the culmen is very slightly arched, and the *base* somewhat *depressed*. It further exhibits the remarkable character of *the rictus being distinctly bristled*: to this latter character we shall subsequently call the reader's particular attention.

(54.) Let us now inquire how far the above peculiarities admit of explanation. The affinity between the black and white creeper (*Mniotilta varia*) and the pine creeper is manifested not only by the foregoing account, but by the similar construction of their feet, wings, and tail; both birds, indeed, have been placed together by the able elucidator of American ornithology, prince

\* Am. Orn. vol. iii. p. 25.

† Ib. vol. ii. p. 110.

Charles Bonaparte. The connection of the pine creeper with *Vermivora* is still more indisputable: like those birds, its nest is pendulous; its tongue the same; its bill is equally entire, and nearly as straight; the elongation of the hind toe is intermediate, in degree, between that of the black and white creeper, and of the *Vermivora solitaria*. Finally, its plumage and general aspect so closely resemble the latter bird, that nearly all European ornithologists have actually mistaken the one for the other! The affinity, therefore, between the pine creeper and *Mniotilta varia* on one side, and *Vermivora* on the other, being now established, the circle of the whole group is made out.

(55.) But we must carry this analysis further. The five types we have now enumerated should, according to the theory we hold, be capable of a primary solution into three; that is, the three that are aberrant should form one circular group: the question therefore is, what are the indications of a circular union between *Dumecola*, *Zosterops*, and *Mniotilta*? We have already alluded to the rigid bristles round the bill of the pine creeper. Now, this very singular character can only be explained by looking to the *Dumecola ruficauda* Sw., or any of the other undescribed species of the same group, where we find the rictus similarly formed; a peculiarity of organisation, be it remembered, which is not found in any other birds of this group: again, *Dumecola*, if truly connected with *Mniotilta*, should have some indication of the scansorial structure, although its depressed and bristled bill makes it the true type of the flycatchers and the todies; now, this indication is not only very strong, but particularly beautiful. The hind claw of *Dumecola*, although not so lengthened as that of *Mniotilta varia*, is fully as long as that of the pine creeper; the claw is also particularly large: the rufous sail of *D. ruficauda*, so universal among the true scansorial creepers, immediately reminds us of those birds; and this analogy is still more evident, on observing that all the feathers end in five naked length-

ened points. In this manner, every part of the structure of *Dumecola ruficauda* can be explained, and the circular union of the three aberrant subgenera of the *Sylvicolæ* is effected.

(56.) In testing the correctness of the foregoing views on the subgeneric types of the genus *Sylvicola* by means of the following table of their analogies, we may solve one or two important questions resulting from the economy of the pine creeper (*Mniotilta pinus*), which may still appear unexplained. The attention of the ornithologist is therefore called to the following table, intended to illustrate the relations of the whole group.

#### ANALOGIES of the Genus SYLVICOLA.

Subgenera of <i>Sylvicola</i> .	Analogical Characters.	Tribes of the Perchers.
<i>Vermivora</i> .	Bill lengthened, conic, entire, or nearly so.	CONIROSTRES.
<i>Sylvicola</i> .	Bill notched a little way from the tip.	DENTIROSTRES.
<i>Dumecola</i> .	Bill bristled and depressed at the base.	FISSIROSTRES.
<i>Zosterops</i> .	Bill slender, arched; nostrils linear, naked.	TENUIROSTRES.
<i>Mniotilta</i> .	Hind toe long, scansorial.	SCANSORES.

(57.) By this table, the close resemblance of *Zosterops*, both to the small Australian honeysuckers, and to the genus *Diceum*, is immediately explained; since it is by this type that the tribe of *Tenuirostres* (to which those suctorial groups belong) is actually represented. *Mniotilta*, as typifying the scansorial birds, should also possess some analogy to the *Rasores*; and thus we arrive at an explanation of the gregarious economy of the pine creeper (*Vermivora pinus*), and of its singular habit, although a scansorial bird, of feeding also upon the ground! So true it is, that an acquaintance with the station which any being actually holds in nature, will generally reveal the true meaning of that perplexing union of opposite characters so frequently found in a single species: anomalies, indeed, which "laugh to scorn" the speculative theories of man, but which, upon patient investigation, display an order and a regularity in the great plan of nature, at once

surpassingly grand and wonderfully minute. The other analogies in this table are too obvious to require pointing out.

(58.) Let us now compare the subgenera of *Sylvicola* with those of *Parus*. It will be remembered, that these two are the typical groups or genera of the subfamily *Parianæ*, and that each contain five subgenera. Now, if these are disposed in their natural series, each of these subgenera will mutually possess a strong and peculiar resemblance to each other, so that, in fact, the subgenera of *Sylvicola* will contain representations of the subgenera of *Parus*. To this test, every group or genus, thought to be natural, must be brought. Now, that this is not only true in regard to the birds in question, but wonderfully regular and beautiful, when developed, the ornithologist will perceive, on studying the following table: —

SYLVIGOLA, subgenera.	<i>Analogies.</i>	PARUS, subgenera.
VERMIVORA.	{ Bill lengthened, conic, very acute, entire; rictus smooth.	} EGITHALUS.
SYLVICOLA.	{ Bill shorter, much compressed; rictus with weak bristles.	} PARUS.
DUMECOLA.	{ Bill depressed; feet lengthened; rictus bristled; wings rounded.	} PARISOMA.
ZOSTEROPS.	{ Bill gradually pointed, notched remotely from its tip; nostrils naked; the aperture linear; feet strong.	} HYLOPHILUS.
MNIOTILTA.	{ "Cet oiseau ( <i>Egithina leucoptera</i> ) présente, au premier aperçu, des rapports avec la Fauvette des Sapins ( <i>Mniotilta pinus</i> ); mais il en diffère assez pour le désigner comme une espèce distincte." — <i>Vieil. Ois. d'Am.</i> t. ii. p. 28.	} EGITHINA.

(59.) To pursue this subject further would be almost needless, since the test we have thus applied to the contents of both groups, demonstrates their natural arrangement. By referring to the preceding table of the analogies of the five subgenera of *Sylvicola*, the naturalist will perceive that, in these two genera, nature preserves the same laws by which she has regulated her primary divisions of matter. We have in each three primary circles, which, when compared with the three

primary groups of birds, are found to correspond. But if we merely admit that the first division is into five, and not three, we still have the same results: not only are the five orders of birds and the five races of the perchers (*Insectores*) clearly represented, but also the five families of the *Dentirostres*, the five subfamilies of the *Sylviadæ*, and the five genera of *Parus* completely typified. Finally, we see the five subgenera of one group beautifully represented by those in the other. With regard to the analogy between *Mniotilta* and *Egithina*, the testimony of M. Vieillot appears to us conclusive. It is, indeed, not a little remarkable, that he should, in the first instance, merely separate *Egithina leucoptera*, as a species, from *Mniotilta*, and that, subsequently, he should characterise it as a distinct genus.

(60.) The genus *Sylvicola* is immediately followed by that of *Setophaga*, comprising the flycatching warblers; and to these, the subgenus *Dumecola* Sw. opens an immediate passage. The group now before us has many striking peculiarities. In the first place, it contains birds which have long been arranged in popular systems with the true flycatchers, from which, however, they are decidedly separated by the length of their legs and the structure of their wings. For the latter we have been prepared, by the more rounded wings of *Dumecola*, where the first (and often the second) quill is graduated, and slightly shorter than the third; while the length of their feet, and the general structure of these members, at once indicate that they are used and adapted for constant exercise. Like all the tit-warblers (*Sylvicola*), the *Setophagæ* hunt for flying insects from bough to bough; they are, in fact, fly hunters; and thus differ most essentially from the true flycatchers, who watch for their prey in a sedentary position, and only seize it when it comes sufficiently near. The most typical examples of this singular group are from Mexico, and have hitherto only been noticed by us in a brief Synopsis on the new birds of

that region : one of these, the beautiful *Setophaga picta*, we have since figured in *Zool. Ill.* 2d series, pl. 2. The American redstart of Wilson may, for our present purpose, be looked upon as the type, or at least as that example of the group most familiar to ornithologists, and whose manners have been fully illustrated by Wilson. All the species yet known to us are natives of the more extra-tropical regions of America. In a new one, now upon our table, from the interior of Brazil, we find the legs more than usually lengthened ; the tail and wings shorter, and the bill narrower ; the length of the feet clearly showing that the bird must frequent the ground. We refrain, however, from offering any remarks upon the circular distribution of this group, since two of the types at present are unknown to us. It is represented, among the true flycatchers (*Muscicapinæ* Sw.), by the Australian fantails (*Rhipidura* H. and V.), with which, as usual, it has been erroneously supposed to have an affinity.

(61.) To the genus *Trichas*, or the yellow-throats, we are conducted by the bird just alluded to. Of this group, only two species are yet known ; one is the *Sylvia velata* of Vieillot\*, the other the Maryland yellow-throat of Wilson (*Trichas personatus* Sw.). These birds, unlike all those of the preceding groups, live habitually upon the ground, and appear, from Wilson's account, to have the same manners as the winter fauvelles of Europe (*Accentor*). Let the naturalist, therefore, peruse the account which Wilson gives of the Maryland yellow-throat, and, without any further information, he will himself pronounce that it might almost have been written to describe the peculiarities of our common hedge sparrow, or fauvelle, the *Accentor modularis* of Cuvier.

(62.) The subfamily of *Sylvicolinæ* is thus seen to form a connected circle, which we have traced through the genera *Accentor*, *Parus*, *Sylvicola*, *Setophaga*, and *Trichas*. We have further shown,

\* *Tan. canicapilla*, *Zool. Ill.* iii. pl. 174.

that *Sylvicola* contains within itself five smaller groups, first resolvable into three primary ones. That there is strong reason to suspect a similar union of the three aberrant genera of this subfamily, namely, *Setophaga*, *Trichas*, and *Accentor*, is apparent from the fact, that *Setophaga rubra*, although certainly belonging to this genus, departs so much from its type, that, with a strongly bristled rictus, it has the completely pointed and compressed bill of *Seiurus auricapillus*, — a bird which should more properly be placed with *Accentor*. Further, we have recently examined a new *Setophaga*, from Mexico, exhibiting the black striped head, and the tawny crown of the last-named bird. With these close approximations, one, or at most two, species would connect the aberrant *Sylvicolinæ* into a circle; and we consider this evidence is sufficiently strong to warrant the assumption that such is actually the case in nature.

(63.) The following table of analogies, condensing the result of the foregoing investigation, will explain the relations subsisting between the genera of the *Sylvicolinæ*, the types of *Sylvicola*, and the tribes of the perching-birds: —

Subgenera of <i>Sylvicola</i> .	Genera of the <i>Pariana</i> .	Analogies.	Tribes of <i>In-sessores</i> .
SYLVICOLA.	SYLVICOLA.	Bill distinctly toothed.	DENTIROSTRES.
VERMIVORA.	PARUS.	{ Bill entire, or nearly so; the nostrils protected by stiff incumbent bristles; the greater power in their feet.	CONIROSTRES.
MNIOTILTA.	ACCENTOR.	Bill entire; climbers.	SCANSORES.
ZOSTEROPS.	TRICHAS.	{ Bill very slender; hind toe lengthened.	TENUIROSTRES.
DUMECOLA.	SETOPHAGA.	{ Bill depressed; take their food on the wing.	FISSIROSTRES.

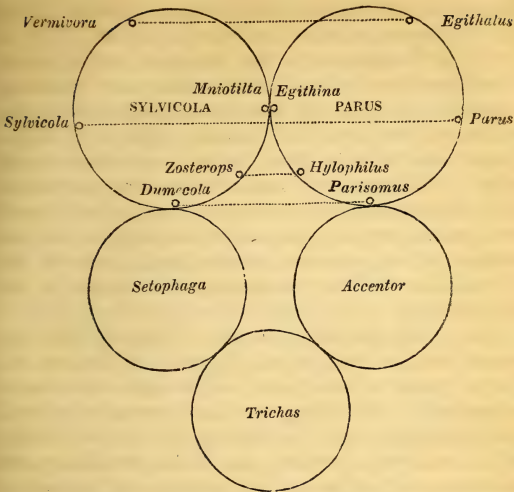
(64.) On attentively studying the above table, the only point upon which we do not feel fully satisfied, regards the situation of *Trichas*; or, rather, relates to a suspicion that *Trichas* is not the genuine type of that genus which is to represent, in this subfamily, the *Tenuirostres*. True it is, that there cannot be the least doubt that *Trichas* intervenes between *Setophaga* and

*Accentor*, since the links connecting all three are nearly filled up. Our suspicion, therefore, is merely excited by our total ignorance of the manner in which nature passes from *Trichas* into the *Ampelidæ*, or fruit-eaters; since, if this is the next family, its junction with that of the *Sylviadæ* may be supposed to take place at this point. On the other, hand it must be remembered that many of the most indisputable passages or transitions in the ornithological system take place through groups which are terrestrial; and, as *Trichas* is strictly of this description, it is contrary to sound logic to doubt that which is known, from our ignorance of that which may be unknown.

(65.) The intimate connection between *Setophaga* and *Sylvicola* enables us, in this place, to illustrate our views on one of the properties of typical or external groups. We have already had occasion to remark, that Mr. MacLeay long ago pointed out the resemblance which such groups as these, in two or more different but contiguous circles, bear to each other; and this resemblance he has termed analogy. Now, this term appears strictly correct, when the groups in question are very comprehensive, and the intervening forms very dissimilar. If, for instance, we look to the two typical divisions of vertebrated animals — as quadrupeds and birds — and compare them with the corresponding groups of the *Annulosa*, or insects, we immediately perceive that there may be an analogy, but that there cannot exist any possible affinity. But how stands the case when the groups to be compared are smaller? Let us look to the circle of the *Pariana* to illustrate this question.

(66.) The typical genera, as seen in the annexed diagram, are *Parus* and *Sylvicola*; the subgenera *Parus* and *Egithalus* in one, and *Vermivora* and *Sylvicola* in the other, are consequently the external or typical groups. Now, in support of our opinion, that what are to be termed *analogies* in larger groups, insensibly change their character, and blend into close *affinities* in smaller groups, we appeal to this circle. Is not the resem-

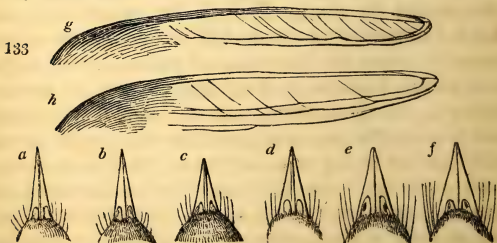




blance (we will neither term it analogy nor affinity) between *Egithalus* and *Vermivora* fully as strong as that between *Mniotilta* and *Egithina*? We should certainly say it is: again, supposing neither *Mniotilta* nor *Egithina* had been discovered, and we had no suspicion that such forms existed, in what manner should we suppose that the genera *Parus* and *Sylvicola* were united by direct affinity? In such a case, we should undoubtedly point to *Vermivora*, as passing into *Parus* by means of *Egithalus*. So close, indeed, is the resemblance between the two, that nothing but a slight difference in their wings and feet serves to separate them. Can then a resemblance, which, in such a case, is sufficiently strong to constitute an affinity, be termed a mere analogy? we think not: on the contrary, we believe, that in proportion as we contract our views, and investigate the nature of the typical or external groups in small circles, we shall find they follow each other in absolute affinity. It is needless, however, to

repeat our opinions on this intricate question: let us rather illustrate it by the testimony of others.

(67.) We have seen that *Setophaga* and *Sylvicola*, notwithstanding their intimate resemblance, stand in two different circles, which circles are connected by the subgenus *Dumecola*: their relation, therefore, according to the views of Mr. MacLeay, are merely analogical; not because this relation is less perceptible than that between *Sylvicola* and *Dumecola*, but because the two groups stand opposite to each other in different circles. Now, setting aside the usual mode of distinguishing affinities from analogies in larger groups, it must be at once admitted, that when the differences between two given groups are so imperceptibly graduated and softened down by intervening species, that it is utterly impossible to discover one link that is imperfect in the chain, *then* such a relation becomes unquestionably one of absolute and direct affinity. To demonstrate, therefore, that this is true in regard to *Sylvicola* and *Setophaga*, we shall cite the authority of Wilson, a man totally destitute of theory, but who watched and studied these birds in their native haunts. Let us take the *Sylvicola Americana*, the blue yellow-backed warbler of the *American Ornithology* (4 pl. 28. f. 3.), as the best and the most familiar example of the true *Sylvicolæ*; we see the bill (*fig. 133. a*) compressed on its sides, and, although wider at the base,



still the breadth is not greater than its height: the bristles of the rictus are short, and do not extend

beyond the length of the nostrils: the first quill (*g*) is scarcely perceptibly shorter than the two next: the tail is very slightly forked, or rather divaricated. This, in short, is the typical structure of the group: as we proceed, however, in the series of species, we trace a slight increase in the breadth of the bill. This is very observable in the *Sylvicola canadensis* (*b*), upon which Wilson makes the following remark: "Though the form of the bill of this bird is decidedly that of a warbler, *it has much of the flycatcher in its manners.*" The *Sylvicola coronata* advances us a step further (*c*); and accordingly, Wilson remarks, that "although the bill of this species obliges me to arrange this bird with the warblers (*Sylvicola*), yet in his food and all his motions he is decidedly a flycatcher." Again, on the blackpoll warbler (*S. striata*), our author writes, "This bird may be considered as occupying an intermediate station between the flycatchers (*Setophaga* Sw.) and the warblers (*Sylvicola* Sw.); having the manners of the former, and the bill, partially, of the latter." The change gradually continues, until finally, upon reaching the hooded flycatcher (*d*), the most aberrant form of our genus *Setophaga*, but which is a *Sylvia* (*Sylvicola* Sw.) both of Vieillot and Bonaparte, our author bursts out with the following exclamation:—"Why this bird should have been arranged with the warblers (*Sylvicola*) is to me unaccountable, as few of the *Muscicapa* (*Setophaga*) are more strongly marked than the species now before us; it is perpetually in pursuit of winged insects." Now, in what respect does this bird differ, in its external structure, from the *Sylvicola americana*? simply in having the bill somewhat broader at the base, and the bristles extending to half the length of the bill; the wings, the feet, and the tail, are precisely the same, with this exception only,—that the two outer feathers of the tail are very slightly graduated, and shorter than the others. The next link is furnished by *Setophaga canadensis* (*e*), where all the tail feathers are graduated; and this is immediately followed by the type

of the group, *Setophaga ruticilla* (*f, h*), or the American redstart of Wilson, which every author, who has mentioned the bird, admits to be a flycatcher.

(68.) Such, then, is the series by which *Sylvicola* and *Setophaga* are united; and it has been marked out by one who had neither a system to propound, nor a theory to support. It is, indeed, most interesting to find that this thread of nature has been followed up with such admirable precision by one who has been aptly termed a field naturalist: for ourselves, we can only add, that every one of these changes in the *habits* of the species here enumerated, is marked by a corresponding difference in some part of their external structure.

(69.) The connection of *Setophaga* with *Sylvicola* being thus established, it remains to be considered if the first of these groups holds that rank in the circle of the *Parianæ* which we have here assigned to it—that is, of a genus;—or whether it is in fact but a subgenus of *Sylvicola*, really occupying the station we have given to *Dumecola*. The solution of this question is exceedingly difficult; and, although it has occupied our attention for many years, we by no means feel that conviction of the accuracy of our present decision, which we do on many other analogous instances. This we unequivocally mention, that those ornithologists who may hereafter have time and opportunity for going over the same ground may not attach undue weight to our opinions. We consider, then, that this is a perfectly analogous case with the affinity between *Thamnophilus* and *Myothera*, both of which are external genera in two different circles, but which do not immediately follow each other in the same circle. Both, in short, seem to be instances of the strongest *external* affinity, or of that relation, which in larger, and therefore more dissimilar, groups would be termed only an analogy. We are induced to form this conclusion regarding the two groups immediately before us, not so much from the perfect analogy which the case bears to others, but because *Sylvicola* appears to be almost as closely connected with *Dumecola* as it is to *Seto-*

*phaga*. We have therefore to choose one or other of these relations for connecting *Sylvicola* with *Zosterops*: and as *Dumecola* shows a much stronger resemblance to *Zosterops*, than does *Setophaga* (which, indeed, seems to have none), we ground our decision on this especial point of argument; more particularly as *Setophaga*, although it seems to have no intimate connection to *Zosterops*, has yet (in some undescribed species before us) a most palpable affinity to *Trichas*. The situation of all these groups will be apparent in the diagram we have already given of the *Parianæ* (p. 57.). But admitting, for the sake of argument, that *Dumecola* had nothing to do with the present group, and that it is ultimately proved to belong to the true *Tyrannulæ* (an affinity which is barely possible), still even this would not effect any change in the situation of *Setophaga*, for this especial reason, that this group is unquestionably related most intimately to *Trichas*,—an affinity which, if once violated, throws the whole division of this otherwise most beautifully arranged subfamily into perfect disorder and confusion.

(70.) We enter among the true warblers (*Sylvianæ*) by the genus *Culicivora*, or gnat-snappers,—a group of delicate little birds, having one half of the bill, as in *Setophaga*, *depressed*, and the other half, as in *Sylvia*, *compressed*. This group is limited to America; and so much do their manners resemble those of the flycatchers, that Wilson describes the principal species as a *Muscicapa*. From these we pass to the pre-eminently typical group of the whole family, the restricted genus *Sylvia*, in which are the golden-crested (*fig. 134.*), willow, and wood wrens,—a

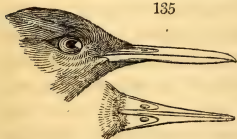
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popular, although by no means a correct name, inasmuch as all these birds are typical examples of the whole family: this passage is effected by certain *Setophagæ* of Brazil, which, by their size and golden coloured crests, so much

resemble those of Europe, that the depression of their

bill is their only prominent distinction. From the diversity of form among the birds composing the typical genus *Sylvia*, we suspect that the subgenera may eventually be detected: thus, the wood and willow warblers exhibit several points of variation from the gold crests. By the subgenus *Acanthiza*, comprising such birds of New Holland as there represent the typical European warblers, we are conducted to the soft-tailed division, or the genus *Malurus* Vieil. To this group, we suspect, belongs the Dartford warbler, the only British, or indeed European, example. The texture of its feathers is very open, and the tail is more particularly long and soft. Several species inhabit Africa; but the most beautiful come from Australia, where we have the superb warbler, and several others, richly ornamented with vivid blue and velvet black plumage. To these succeed the wren-like warblers of Africa, forming the genus *Drymoica*, and of which *Prinea* may be a subordinate type or subgenus. These latter birds have all the activity and familiarity of the true wrens (*Troglodytes*), and so much resemble them in general appearance, in their short sweet song, and the throwing up of the tail, that it is not very surprising they should have been classed with the scansorial creepers. The fifth genus, or type, which should represent the *Tenuirostres* and the *Grallatores*, has not been clearly made out; although it may possibly be the genus *Orthotomus* Horsf., since this form has a most unquestionable affinity to *Prinea*, and in the depression and compression of its bill seems to approach the gnat-snappers (*Culicivora*); the type of *Orthotomus* is not, however,



the bird described as such, but the *Dicea à longue bec* of the Paris Museum (*Orthotomus longirostres* Sw.), the head of which (*fig. 135.*), of the natural size, is here given from a

drawing made from this specimen, the only one yet known. The union of the three aberrant genera, namely, *Drymoica*, *Orthotomus*, and *Culicivora*, seems

effected by certain Indian species of *Drymoica* which have the depressed and bristled bill of *Culicivora*.

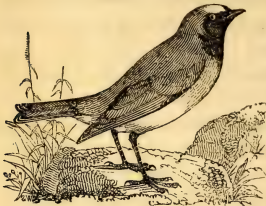
(71.) The analogies which the preceding five genera exhibit to the tribes of perchers are singularly interesting, since we find that *Drymoica* and *Prinea* represent the scansorial birds, and, consequently, the common wren of Europe. In *Orthotomus*, we have the long bill of the *Tenuirostres*, with the lengthened feet of the genera *Trichas*, *Agrobates*, *Anthus*, and *Motacilla*. The situation of the subgenus *Apalis*\* is somewhat doubtful, but it may probably belong to *Orthotomus*. *Culicivora*, with which we began this subfamily, from its resemblance to the true flycatchers (*Muscicapidæ*), is clearly the fissirostral type.

(72.) The PHILOMELINÆ, or nightingale warblers, form the fourth great division of this family. It contains the nightingale, the reed and sedge warblers, and many other of our summer visitors. The general size of these birds is larger, and their structure much stouter, than those we have just quitted; while the true warblers feed only upon insects, and thereby resemble the rapacious birds, the nightingale warblers, like the thrushes, subsist equally upon fruits, and still further typify that family in the well-known melody and strength of their song. The first genus which presents itself is *Curruca*, while *Philomela*, *Phœnicura*, and *Agrabates*, are the only genera we have yet made out: the fifth is probably represented by two or three extraordinary flycatching warblers, shown to us by M. Ruppell, as part of his recent discoveries in Abyssinia, and which he erroneously thought belonged to the Australian genus *Monacha* (*Drymophila* Tem.) The sedge warblers of Europe (*Curruca*) form a large and interesting group, containing several minor divisions or subgenera, whose natural affinities require much study. Marshy thickets, reedy banks of rivers, and similar humid situations, are the favourite haunts of these plain-coloured birds. The nightingales (to which we now restore the classic name

\* Zool. Ill. ii. pl. 119.

of *Philomela*) represent the typical perfection of this subfamily: their own particular circle has not been worked out, but it will comprise not only the nightingale, but the white-throated and the black-capped warblers of Britain; these latter assuming much of the appearance, while they are perfectly analogous to the tits (*Parus*). From these we pass to the genus *Phænicura* Sw., familiar to every one by the frequency of our native example the redstart (*fig. 136.*); nearly all the species, in

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fact, have the tail of a bright chestnut or rufous colour. The tenuirostral type appears to us to be represented by the *Sylvia galactotes* of Europe, which is evidently a walking bird, and perfectly analogous to *Furnarius*, *Motacilla*, and the other long-legged warblers representing the *Grallatores*.

(73.) The analogies which may be traced between this group and many others, are no less striking than those of the last. They are, in fact, so numerous, that we hardly know where to select our illustrations: the best, perhaps, will be to compare this with the neighbouring group of true thrushes: we thus find the nightingale represented by the famous mocking bird of America (*Orpheus*); the *Curruca Meruloides* Sw. by the typical thrushes; and the red-tailed rock thrushes (*Petrocincla*), by the red-tailed redstarts. Again, on looking to the *Sylvianæ* (the subfamily we have just quitted), we see the soft tail of *Malurus* transferred to the reed warblers (*Curruca*), while the wood wrens (*Sylvia*) and the nightingales are both characterised by even tails: the broad rounded form of this member, in *Culicivora* and *Phænicura*, is another very curious analogy; and the resemblance of *Agrabates* to *Furnarius* is obvious to every ornithologist.

(74.) The SAXICOLINÆ, or stonechats, represent the

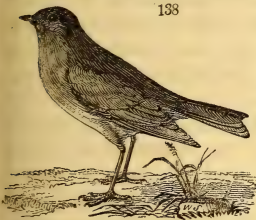


fifth subfamily. These, for the most part, are solitary and shy, living on heaths, moors, and desert plains, where they are generally seen pursuing insects upon the ground. This economy, so totally different from all the warblers we have hitherto noticed, is accompanied by several peculiarities of structure: the legs are very long and muscular; while the bill, as in all birds which live upon winged insects, is broad at the



base, and provided with weak bristles, to confine the struggles of their prey. The *Saxicolæ* (*S. pileata*, fig. 137.) proceed by running very swiftly, and thus imitate the wagtails, which proceed in the same manner, and the swallows, which skim the surface of the ground by flight. The stonechats, properly speak-

ing, are birds restricted to the Old Continent, and we have three examples of the group in England, viz. the white-rump, or wheatear, the whinchat, and the stonechat. The first indication of their habits is seen in the



common redbreast (*Erythaca rubecola* Sw., fig. 138.) which thus forms a passage from the redstarts: close to this well-known species must be placed, as subgenera, the American blue-birds (*Sialia* Sw.), and the Australian robins (*Petroica* Sw.); from these to

the true stonechats (*Saxicola* Bech.), the passage appears very gradual; while the genus *Thamnobia*, now first defined, leads us to the stronger and more hook-billed genus *Gryllivora*.

(75.) The fifth, or grallatorial genus of the *Saxico-*

*linæ* is involved in much obscurity. We had long entertained the belief, that the baker-birds of South America (*Furnarius* Vieil.) naturally filled this station, particularly as a new species has of late years been discovered, having a red breast; thus resembling the robins in colour, although not at all in structure. On the other hand, the resemblance between *Petroica bicolor*\* and the genuine locust-eaters (*Gryllivora*) is so remarkably strong, not only in colour, but in form, that we think the two groups cannot be separated by one so dissimilar as that of *Furnarius*. In the subsequent pages, we have characterised what appear to be three distinct species of *Gryllivora*, hitherto confounded under the common name of *G. saularis*: let the ornithologist compare these with the *Petroica bicolor*, and he will, no doubt, adopt the opinion we here express as to the



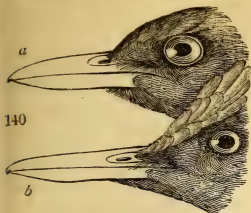
affinity of the two genera. The long-tailed locust-eater (*Gryllivora longicauda*, fig. 139.) seems to be the species which connects the stonechats with the wagtails, for it has the general structure of *Gryllivora*, with the pale and slender legs of *Enicurus*.

(76.) The union of all the sub-families of the *Sylviadæ*, which we have now gone through, is affected by the *Gryllivoræ*, the genus just mentioned, among the *Saxicolinæ*, uniting to *Enicurus*, which stands at the confines of the wagtails (*Motacillinæ*). As all naturalists agree in placing *Enicurus* close to *Motacilla*, nothing need be said on that affinity; while the strong resemblance between the bills of *Enicurus* (fig. 140. *b*) and *Gryllivora* (*a*),—both also having the wings and the feet formed nearly on the same model,—leaves no doubt on our mind of an absolute affinity between them.

(77.) Having now traced the great circle of the

\* Zool. Ill. ii. pl. 43.

*Sylviadæ* through all the subfamilies, and many of the inferior groups, we shall endeavour to explain in what manner the three which are aberrant become united. This union is fortunately so perfect, that we can dismiss the subject in a few words. The Australian genus *Petroica*, as we have already shown in another place\*



is the southern representative of our robin; the legs are, nevertheless, weaker, and the bill so much depressed, that all ornithologists have classed these birds as flycatchers: all, therefore, that is necessary, to connect the robins with the fantailed flycatchers of America (*Setophaga* Sw.), is a bird which still preserves the general form of *Petroica*, but which has the smaller and weaker feet of *Setophaga*: now, such are the true characteristics of the Australian *Petroica Lathamii*. So much, indeed, does it depart from its own type, and touch on the American, that, but from the most minute examination, joined to a knowledge of its country, we should be quite at a loss to which group it belonged: this affinity is even marked in the most conspicuous manner by the colours of the two groups. The orange-red of the robin changes in the *Petroica multicolor* to a full crimson, but the belly is still white. In *P. Lathamii*, the whole body is rich pink, and the white frontal spot of the former species is very small. In *Setophaga miniata* Sw., this spot totally disappears, but the whole body is still bright red; and this colour is still continued to *Setophaga picta* Sw. †: thus not the slightest interval occurs between the types of both groups, although the one belongs to the *Saxicolinæ*, the other to the *Parianæ*.

(78.) Let us now look to the analogies between the five subdivisions of the great family of warblers,

\* Zool. Ill. 2d series.

† Zool. Ill. ii. pl. 1.

and the five tribes of perching birds: we shall first place them in the following order:—

SYLVIADÆ. — *The Analogies.*

Tribes of the Perchers.	<i>Typical Characters.</i>	Subfamilies of the Warblers.
CONIROSTRES.	{ Bill slightly notched; the most perfect in their respective groups.	} <i>Sylvianæ.</i>
DENTIROSTRES.	Bill more distinctly notched.	<i>Philomelinæ.</i>
FISSIROSTRES.	Bill depressed; the base bristled.	<i>Saxicolinæ.</i>
TENUIROSTRES.	Bill very weak; rictus smooth.	<i>Motacillinæ.</i>
SCANSORES.	Climb, and seek their food in trees.	<i>Pariana.</i>

By this table we get some of the most prominent distinctions of both groups. The two first analogies, as may be expected, are very remote; but the three next are so decided, that they must strike every reader. Who that has seen the stonechats rapidly coursing over a common, in pursuit of winged insects, is not immediately reminded of the swallows, which do the same upon the wing? Both groups are particularly remarkable for the great size of their heads, and the broad base of their bill; characters universal among all natorial and fissirostral types. The *Motacillinæ*, or wagtails, have the bill unusually slender, and thus represent the wading order; and the haunts of both are always in the vicinity of water. Every one has seen the adroitness with which the tomtit clings to the smallest branches of trees, examining every bud, pecking at every hole, and indefatigably searching for insects hid in such concealments. No other birds have these manners but the woodpeckers; and this resemblance extends even to the bill, which in both is strong, pointed, and entire.

(79.) But it may be said, that the stonechats as much resemble the gallinaceous order as they do the *Fissirostres*, since like them they are continually upon the ground, and, in proportion to their size, have the legs equally strong. Let us, therefore, draw up a second table, in which these two groups are placed opposite each other:—

Orders of Birds.	Tribes of Perchers.	Analogies.	Subfamilies of Warblers.
RAPTORES.	<i>Dentirostres.</i>	Feed only upon animals.	<i>Sylviadæ.</i>
INSESSORES.	<i>Conirostres.</i>	{ Feed on animals and vegetables.	{ <i>Philomelinæ.</i>
RASORES.	<i>Scansores.</i>	{ Terrestrial, living on the ground.	{ <i>Saxicolinæ.</i>
GRALLATORES.	<i>Tenuirostres.</i>	{ Bill very slender; frequent the vicinity of water.	{ <i>Motacillinæ.</i>
NATATORES.	<i>Fissirostres.</i>	—————?—————	<i>Parianæ.</i>

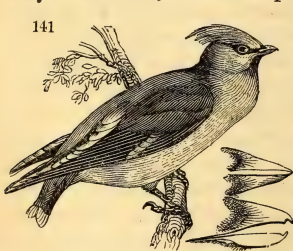
(80.) On looking to this second table, it is somewhat singular, that notwithstanding the analogies of the two first subfamilies are made to appear as reversed, that they should still possess properties which enable them to be compared with either. Indeed, the resemblance between the *Sylvianæ* and the *Myotherinæ* (which latter truly typify the *Dentirostres*) is so particularly strong, that we have not a doubt they mutually represent each other in their respective circles. The only question is, how, with this strong analogy between themselves, they can at the same time represent two different tribes of the perchers? The nightingales (*Philomelinæ*), in like manner are the unquestionable prototypes of the true thrushes (*Merulinæ*); and as these latter certainly represent the *Conirostres* in their own family, how can the former be also compared to the *Dentirostres*? The only way at present in which we can account for this transportation, if such it be, is by the property belonging to typical groups of exhibiting more than one analogy; and that a group, for instance, which is the representative of the *Dentirostres* in its own circle, may yet represent another group in another circle, whose true analogy is with the *Conirostres*. Certain it is, that, however strong the resemblance may be between the four first series of this latter table, the last is so very obscure, that our suspicion is excited; and we immediately perceive that however ingenious, it is, as a whole, but a false and delusive table. The analogy of the *Parianæ* to the scansorial order is too obvious to be questioned for a moment; and therefore

any table of supposed analogies, however ingeniously contrived, where this direct relation is destroyed, must be radically false.

## CHAP. VI.

THE DENTIROSTRES CONTINUED. — THE FAMILY OF AMPELIDÆ,  
OR CHATTERERS.

(81.) WE now arrive at the second aberrant group of the order. It is composed of the AMPELIDÆ, or chatterers, so named from the loud and monotonous notes of some of the species. It is a family more remarkable for beauty and singularity than for its extent; hence much difficulty has arisen in making out the subordinate divisions and the succession of its groups, just as the disjointed parts of a machine can seldom be fitted together when many others are wanting. The chatterers are very locally distributed, for all the principal types belong to the



tropical parts of America; one only, the *Bombycilla garrula*, being found in Europe. They are distinguished from all others of the *Dentirostres*, by the enormous width of their gape, which in many extends beyond the eye, and in

some is nearly as wide as that of a goatsucker. The particular use of this structure is at once explained by the nature of their food: they live almost entirely on soft berries and small fruits, which, from being swallowed whole, naturally requires a very wide passage to pass down the throat: a broad bill always indi-

cates weakness, and when the sides of this important member are not defended by bristles, we may feel assured that insects, or at least those which are capable of much resistance, form no part of the food. This is truly the case with the chatterers, whose nourishment is derived almost exclusively from the vegetable kingdom. They are perpetually hopping among fruit-bearing trees, and seem to know, by a wonderful instinct, the period when each species yields its berries: they never perch upon the ground; the feet are consequently either very short or very feeble, and as their structure is adapted for grasping boughs, the soles are broad, and this breadth is increased by two of the toes being more or less united. The naturalist will discern in all these peculiarities, many points of analogy to the orioles, the plantain eaters, and the tribe of *Tenuirostres*, all of which are represented by the family before us.

(82.) That the chatterers follow the warblers, there can be no reasonable doubt; seeing that their aberrant genera have many strong points of resemblance to those birds, while the typical examples are perfectly analogous to the caterpillar-catchers (*Ceblepyrinæ*), the orioles, the Paradise-birds, and all the other fruit-eaters. Without, therefore, seeking to determine the precise point of union, we shall at once proceed to notice the subfamilies under which the different genera appear to be arranged; these we designate as follows:—1. *Leiotrichanæ*, or long-legged chatterers; 2. *Pachycephalinæ*, or great-headed chatterers; 3. *Bombycillinæ*, or swallow chatterers; 4. *Ampelinæ*, or true chatterers; 5. *Piprinæ*, or manakin chatterers. The three first are aberrant, but the species are so few that we have no indication of a circular union: the two latter are the typical groups.

(83.) In the first division we have only two genera, *Leiothrix* and *Pteruthius*, both belonging to Tropical India, and each represented by a single species. The bills of these birds are short and moderately strong, with the lip notched; that of *Pteruthius* is strong and abruptly bent, giving it very much the character of the

genus *Pachycephalus*. Both these genera differ from all others in the family by having short rounded wings and large feet, the toes of which are more or less united at their base. These latter characters are very essential, because by them the birds in question are proved to have no connection with the shrikes, to which family one of them has been hastily referred, on account of its abruptly hooked bill: this latter structure, indeed, is so striking that we should have had some doubts whether *Pteruthius* really belonged to the chatterers, if one character alone is to be considered; but then the very same reason might be urged against the admission of *Vireo*, *Pachycephala*, and even *Pardalotus*: nay, *Crytura* itself must follow; for each and all of these have the tip of the bill as much hooked, and as strongly notched, as *Pteruthius*. In regard to *Leiothrix*, its old name of *Parus furcatus* fortunately points out that this curious bird has a nearer relation to *Parus* than to any other genus; and it must be remembered that in our exposition of the last family, the *Parianæ* is precisely that group which forms the passage from the warblers to the chatterers. The name of *Leiothrix* will express the soft and silky texture of its plumage: the bill is not unlike that of *Vireo* and *Pachycephala*, the under mandible being nearly as thick as the upper,—a form which we have been already prepared for by the *Trichas velata*; the most aberrant species yet discovered among the titmice, and consequently that which makes the nearest approach to the chatterer family. Like that bird also, *Leiothrix* has very long legs, but its wings, from being rounded, resemble those of *Vireo* and *Pachycephala*. Its peculiar distinction, however, lies in a short but deeply forked tail, the ends of which diverge outwards in such a manner that we are immediately reminded of the drongo shrikes. These two genera are the only birds we can yet place in this subfamily; but we have casually inspected one or two others, also inhabitants of India, which quite satisfies us that future discoveries will bring to light other links of the series between the *Piprinæ* and the next group.



(84.) In the second subfamily we placed three well-marked genera, — *Vireo*, *Laniisoma*, and *Pachycephala*, Sw. The genus *Vireo* is composed of little green coloured warbler-like birds, somewhat resembling flycatchers, but readily distinguished from that family by their strong legs, and their cylindrical bills, the base of which is not dilated: while the abrupt hook of the upper and the thickness of the lower resemble the structure seen in the genus *Myothera*. There are, nevertheless, two distinct sections of these birds, which may possibly constitute subgenera: in one, represented by *Vireo olivaceus*, the red-eyed flycatcher of Wilson, the wings are pointed; in the other, to which belongs the white-eyed warbler of the same author, they are rounded: these are connected by the *V. flavifrons*, which has the bill of this genus and the wings of the next: thus all doubt is removed on the affinity between *Vireo* and *Pachycephala*, two genera, however, which in other systems stand in different families. The thick-headed chatterers (*Pachycephala* Sw.), are entirely confined to New Holland; they resemble small thrushes more than any other birds, and as such have been described. Lewin informs us that several species have a loud, shrill, and pleasant note, which they sing about daybreak, when perched on the upper branches of high forest trees; and it is rather curious that similar situations and times are chosen by the typical chatterers of South America for uttering their uncouth cries. Of the economy of this group, in other respects, we unfortunately know nothing: they may live partially upon fruits; but the long and weak bristles surrounding the bill clearly show that insects constitute a part of their nourishment. The third type which enters into this division, and which seems intermediate between the two last, is represented by a very rare Brazilian bird as big as a small thrush. It has the elongated and abruptly hooked bill of *Vireo*; with the large puffy head and rounded wings of some of the Australian *Pachycephala*. Differing, however, from the latter in several points of structure, as well as in geographic distribution,

we felt it necessary to give it the subgeneric name of *Laniisoma*.\*

(85.) The third aberrant division is indicated by the European chatterer, the singular forked-tailed genus *Phibalura* (fig. 142.) (*P. flavirostris* Vieil. †) and the *Procnias ventralis* Ill. ‡, or green swallow of Brazil. All these birds, particularly the first, are remarkable for the great length of their wings, the first quill of which is nearly the longest. This structure invariably indicates great powers of flight; and as we find a different form of wing in the typical genera, so we detach these birds from all others of the family, and consider them as the fissirostral type: the feet, although strong, are particularly short, while



the length of the anterior toes, in comparison with the hinder ones, offers a decided analogy to the true swallows. This resemblance, indeed, is so strong as to have formerly induced M. Temminck to place one species (*Procnias ventralis* Ill.) in that very group which it only represents. All these characters are more especially seen in the European chatterer, which thus becomes the representative of the group.

(86.) We now come to the two typical subfamilies, upon the first of which, the AMPELINÆ, we can speak with much more certainty, since the forms and species are by no means few. Some of the most extraordinary birds in creation belong to this group; while others, by being clothed in the richest hues of blue and red, nearly rival the humming-birds. The former are generally the size of a large thrush, and their singular appendages, if not ornamental, are certainly grotesque. One has the neck furnished with a number of long, slender,

\* Northern Zoology, vol. ii. p. 492.

† Zool. Illustrations, i. pl. 31.

‡ Ibid. i. pl. 21.

naked wattles; while, from the forehead of a second, rises a fleshy caruncle, which, when elevated, reminds us of the horn of a unicorn, but which is probably carried like that of the turkey; a third is perfectly white, with the face and throat bare of feathers, and of a beautiful green colour. Could we but know the habits and economy of these singular birds, which, had they not been seen, might be thought fabulous, what an interesting page of nature's volume would be unfolded! Yet, at present, we only know that they live in the deepest and most secluded forests of Tropical America, where they subsist upon an infinite variety of fruits unknown to Europeans. They are much oftener heard than seen, since their notes are particularly loud, and are uttered morning and evening from the deepest recesses of the forests: we have sometimes caught a distant view of them, perched upon the topmost branches of the loftiest trees. All the species above alluded to are comprised in the genus *Casmorhynchus* of M. Temminck, while the beautiful genus *Calyptomina* of India forms the passage from this genus to the swallow chatteringers just described. We quit *Casmorhynchus* for the genus *Ampelis*, or the true chatteringers, called by the French *Cotinga*, and constituting a group

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of surpassing beauty: they are rather smaller in stature, and, but for their shorter and broader bills, might be taken for thrushes. There is a peculiar soft, silky, and glossy texture on the feathers, which increases the splendour of the changeable blue, purple, and dark red, which generally spreads entirely over their plumage. They differ from the last also, which are

plain coloured birds, in the head and neck being always clothed with feathers in the usual manner. Le Vaillant, in one of his costly ornithological works\*, has figured nearly

\* Hist. Nat. d'une Partie d'Oiseaux de L'Amérique et des Indes.

all the species. In *Casmorhynchus* and in *Ampelis* there are no crested birds; but this ornament forms the principal distinction of the genus *Rupicola*, or rock manakin of Cayenne. The familiar name of cock of the rock, long bestowed on this bird, is very characteristic, since it unquestionably represents the rasorial type of the true chatterers: by this we are led to the *Ampelis carnifex* of Linnæus, forming our genus *Phænicercus*; a remarkable form, having the general habit and size of this division, and the feet of the true manakins, to which now we proceed.

(87.) The PIPRINÆ constitute the subtypical group of this family: they are called manakins, from their diminutive size, which is seldom larger than that of a tomtit. Here again we find the richest tints of yellow, orange, crimson, and blue, relieving the olive green or deep black plumage of these elegant little birds. Like the preceding, they are strictly American, and chiefly occur in the deep virgin forests of the tropics, but they are much more social than the *Cotingas*. They live in little bands, are continually in motion, and feed almost entirely on the large soft berries of the different species of *Melastoma*. The nest of one species (*P. pareola*) is often built in the fork of a shrub, in such an exposed manner, that the female can look all round and watch the approach of danger: we found one in such a situation in the forest of Pitanga, a single leaf of a large pepper-plant (*Piper*) forming a kind of umbrella shade over the female, which was sitting, and did not rise from her nest as we passed onward. The manakins are easily known by their weak and very slender feet, of which the two outer toes are considerably united. By that singular little bird *Calypturna cristata*\* the genus *Pipra* is united to that of *Pardalotus* Vieil., or the spotted manakins of New Holland. Of a size equally diminutive, these are nevertheless distinctly separated from the last by their stronger bill and more pointed wings; while the feet are stronger, and more perfectly formed,

\* Birds of Brazil, i. pl. 24.

all the toes being divided. Lewin, in his *Birds of New South Wales*, when describing one species, remarks, that it frequents high forest trees, constantly singing a short but pleasing song in passing from tree to tree. This genus, in all probability, represents that of *Diceum* among the honeysuckers, and *Euphonia* among the tanagers. The subgenus *Metopia*\* seems necessary to connect *Phœnicercus* with *Pipra*; and there are one or two birds evidently belonging to this division not yet described, which, by their stronger bill, evince a tendency towards uniting with *Leiothrix*.

(88.) On a general review of the affinities of this intricate group, the systematic ornithologist will observe that there is more than one considerable hiatus in the series, and that the situation of several of the subgenera is extremely doubtful. Upon this we shall offer a few words. It has been imagined by some writers, that the fewer species or genera there may be in a family or group, the more easily may they be arranged: now, this may be very true, if an arbitrary or artificial system is the object proposed; but when that of *nature* is to be studied, the very reverse of this opinion must naturally and obviously be true. In respect to the *Ampelidæ*, there are fewer forms and species than in any other family of the *Dentirostres*; and, therefore, in distributing the aberrant genera into three divisions, it is more for the sake of perspicuity than from any confidence we have that these primary divisions are natural. On the two typical groups there can be no doubt, nor have we much on that which contains *Bombycilla*; but the accuracy of the two others may be reasonably questioned, or at least they should be looked upon with doubt. There are certain characters in the genus *Pachycephala*, which leads us to suspect that it is the scansorial type of the whole family, and that it consequently enters into the same division with *Leiothrix*; this would also comprehend *Vireo*, and thus these two genera, the one closely resembling *Parus*,

\* *Metopia galeata*; *Birds of Brazil*, i. pl. 23.

and the other *Sylvia*, would come into that group of the *Ampelidæ* which forms a passage to the *Sylviadæ*. If this suspicion is well founded, the grallatorial or tenuirostral type is still undiscovered. Hitherto we are unacquainted with any bird of this family which feeds upon the ground, and which might therefore be supposed to supply this deficiency; but the crested thrush of Lewin \*, judging from the figure, appears between a lark and a *Pachycephala*, and may, therefore, possibly be the type in question. It is described as inhabiting rocks and barren "scrubby" places, having a jerk in its walking motion, at the same time erecting its crest like the cockatoo: but as no specimen of this bird has yet passed under our observation, our suspicions are consequently founded on mere conjecture.

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## CHAP. VII.

### THE DENTIROSTRES CONCLUDED. — ON THE MUSCICAPIDÆ, OR FLY-CATCHERS.

(89.) THE most insectivorous family of the *Dentirostres* is composed of the *Muscicapidæ*, or flycatchers; a group hardly less numerous than that of the warblers, and composed, like them, almost entirely of small birds: both families are insectivorous, that is, habitual devourers of insects; but very many of the warblers (even in the more typical genera) feed also upon fruits, of which the robin, the blackcap, and the whitethroat are notable examples. The flycatchers, however, properly so called, seem to be strictly and exclusively insectivorous, or, at least, it has not yet been ascertained that any of the species composing the typical group *Muscicapinæ* ever partake of fruits. This peculiarity of diet, independent of many others, separates them from the warblers on

\* B. of N. H. pl. 9.

one side, and from the *Ampelidæ*, or chatterers, on the other; while another is to be found in the mode or manner of their feeding. The warblers fly about, hunting down their prey, searching among trees, and roaming from place to place after their favourite food; hence they become ambulating flycatchers; and their feet are consequently large and strong in comparison to the size of their bodies. We need only look to the gold-crested and wood warblers as exemplifications of this remark, even among those species which frequent trees; but in such, as in the stonechats, *Saxicolinæ*, and *Motacillinæ*, as habitually walk, the feet are much stronger and the shanks more lengthened. Now, the very reverse of this structure is the typical distinction of the flycatchers; their legs are remarkably small and *weak*, — more so, perhaps, than those of any dentirostral birds, — showing at once that their feet are but little used; and such we find to be the case. The flycatchers constitute the fissirostral type of form among the leading divisions of the *Dentirostres*, and they consequently exhibit all the chief indications\* of that PRIMARY TYPE of nature, as it is exhibited in the feathered creation. These, as the intelligent ornithologist already knows, are manifested in a large and rather wide mouth and bill; short, feeble, and often imperfect feet; great powers of flight, and often a considerable length of wing: the developement of this latter structure is not always apparent, but it is the peculiar power of their flight upon which they chiefly depend for procuring subsistence. They are mostly sedentary, and only dart upon such insects as come within a sudden swoop, without attempting to pursue their game further, if unsuccessful in the first instance: they return, in fact, to the spot they left, or to another very near, and there await patiently until another insect passes within the proper distance. This habit of feeding at once explains the reason of the feet being so small and weak, by showing that they are merely used to support the body; or, at least, that they are not employed

\* Classification of Animals, p. 249.

in constant exercise or exertion, as in the generality of other birds. Other characters accompany these, no less indicative of birds which feed exclusively upon the wing: the bill is always considerably depressed or flattened, particularly at its base; and the sides of the mouth are defended with stiff bristles, to confine the struggles of their prey.

(90.) The geographic range of this family, taken collectively, extends to the temperate and tropical latitudes of the Old and the New World; although, strictly speaking, there are probably no genuine flycatchers in North America, where their station would seem to be filled by the little tyrants (*Tyrannula*) and the flycatching warblers (*Sylvicolinæ*), both which groups are unknown in Africa and India, — the two countries most prolific in the typical species of *Muscicapa*. Having already made the natural arrangement of this intricate and interesting family the subject of a separate work\*, which our space in this will not enable us again to go over, the reader must be satisfied with a rapid survey only of the primary divisions. The contents of the entire family, together with the singular and beautiful analogies presented by the latter groups, even in their most minute details, will be found fully illustrated in the work alluded to.

(91.) The primary divisions appear to be represented by the following genera: — *Eurylaimus*, *Muscicapa*, *Fluvicola*, *Psaris*, and *Querula*: these constitute, according to our present views, the types of so many subfamilies, very unequal, indeed, in their contents, yet blending sufficiently into each other to point out their circular succession. The two first are clearly the typical and the subtypical groups; the three next are aberrant.

(92.) The *Eurylaiminæ*, or broadbills, are the most remarkable birds of the whole family: the species are very few, and their geographic limits seem to be restricted

\* The Natural History and Arrangement of the Muscicapidæ, or Flycatchers.



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to the hottest parts of India, where they inhabit the forests. In size they exceed all others, save the genus *Querula*, in this family, being about the size of starlings; while the enormous breadth of their bills, and the peculiar brightness of their colouring, renders it impossible for the student to mistake them for any other genus. The bill (fig. 144.) is not only excessively broad, but the margins of the base are so dilated, that they often project

over those of the lower mandible, while its substance seems much more solid than in the ordinary flycatchers. Although very few species have hitherto been discovered, it is quite clear that the five leading types have come to light, although only one example of the genera *Serilophus*, *Psarisoma*, and *Platystoma* are yet known. It may here be observed that, notwithstanding the great width of the bill in all these birds, it is nevertheless much more convex above, and in some instances is even more raised on the culmen, than any of the others: the feet, also, and the whole structure of the body, are more robust. Hence, although the width of the mouth, and the great size of the head, would indicate this to be the pre-eminent typical group, yet all the other characters would place it as the typical. *Serilophus* is evidently the rasorial or crested type; and it departs considerably from the others, by the only species yet known being very fond of fruits: this is in conformity with the strong and remarkable analogy it shows, even in its outward appearance, to the wax-winged chattering (*Bombycilla*).

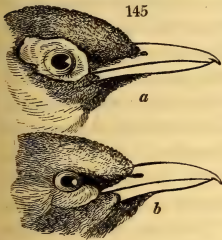
(93.) The great subfamily of MUSCICAPINÆ is that which contains the ordinary flycatchers. These birds, in comparison to the last, are much smaller in size, and weaker in the whole of their conformation: none are so large as a sparrow; and the generality do not

exceed the dimension of that species so common in England — the *Muscicapa grisola*. The bill, although it is rarely so broad as in the last group, is much more flattened; and the bristles at the gape are more developed. Their whole structure, also, is more slight and delicate; but their colouring, although sometimes elegant, is almost devoid of vivid tints. The different form and length of the bill and feet furnish the characters by which the genera and subgenera are distinguished; while the species, which are exceedingly numerous, with the exception of the genus *Todus*, are only found in the Old World. The typical genera are *Todus* and *Muscicapa*; the aberrant are *Megalophus*, *Monacha*, and *Rhipidura*: the two first are so numerous in species as to contain subgenera; and they will, therefore, require a more detailed notice than we can give to the others.

(94.) The recent re-discovery of the genus *Megalophus*, — which, although known to Buffon, remained lost to modern ornithologists until very lately, — together with that of *Serilophus*, nearly at the same time, has established that immediate reunion between the last and the present subfamilies which at once demonstrates their close affinity. This genus, at present, is represented only by a single bird, the *Todus regius* of the old authors, which seems to inhabit a very limited district in Tropical America. It is, in many respects, a most extraordinary type, — possessing, like *Prionops* among the *Laniadæ*, a complete rasorial crest, with the short and imperfect feet of the fissirostral structure. With such a combination of characters, it is almost difficult to say to which type it truly belongs: but such instances are by no means uncommon; and, as *Rhipidura*, at the opposite side of the circle, has the longest feet and the largest tail, we may consider the latter as the rasorial, and *Megalophus* as the fissirostral, genus of this circle. The truth, however, seems to be, that in very *small* groups like the present, the primary types of nature do not show *all* their own characters, but impart some one of them, as it were, to its neighbour.

This blending of forms, distinct in themselves, *in small circles of affinity*, is not at all peculiar to birds, but seems to be a universal law of nature. Be this, however, as it may, certain it is that no genus of the *Muscicapinæ* makes so near an approach to *Eurylaimus* as this, more especially since the discovery in India of *Serilophus*, as already mentioned.

(95.) The next aberrant genus is *Monacha*. Its characters were pointed out long before it received this name, which is nevertheless antecedent to that of *Drymophila*, subsequently proposed for it without any assignable reason; and, in the face of the fact of this very name, *Drymophila*, having been employed by us long before, to designate a totally different group. All the birds of this genus are restricted to Australia and its neighbouring isles: as they are the most aberrant of all the flycatchers, so are they the most dissimilar from the typical examples: the bill, in fact, is strong, and is very little depressed, while the culmen is arched and elevated. All the other characters of its congeners, however, are preserved in the wings and feet, so that we can have no doubt of its true station, more particularly when we call to mind the genus *Psaris*, hereafter noticed, which this



genus represents in its own circle. It is somewhat singular that the original describers\* of our *Monacha telascopethalmus* (fig. 145a.) and *Chrysomela* (b) should have made these birds into a new genus, when it is quite obvious they are typical examples of the present group: they are certainly two of the most beautiful species yet discovered;

the first showing the analogy of *Monacha* to *Ceblepyris*, *Psaris*, and *Charadrius*, and the second indicating the same relation of the group to *Oriolus* and the paradise oriole, each and all of which as being tenuirostral types, become mutual representatives

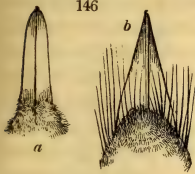
\* Lesson et Garnot, Zool. de la Coquille, pl. 18. f. 1, 2.

of each other, not merely in theory, but actually so when the circles of affinity, wherein these birds are placed, come to be compared with each other.

(96.) *Rhipidura* is the third of the aberrant divisions: like the last, it seems peculiar to the Australian range; and is distinguished at once from all the preceding, by its very long legs and its large fan-shaped tail. The typical species, at least, are thus distinguished; but some doubt hangs over the limits of the group, chiefly from our ignorance of the manners of several birds, which are supposed to come within its range: in our systematic arrangement we have specified the typical characters, and must leave other points for the present undetermined.

(97.) The genus *Muscicapa*, the most numerous assemblage in the whole family, obviously succeeds to the fantailed flycatchers. In our introductory remarks, we have more especially adverted to these birds, and this saves us the necessity of recapitulating their typical characters. The whole are natives of the Old World; and they present so much diversity in the different forms of their wings, bill, and feet, that we have ventured to designate the five leading forms: these will be found in our systematic arrangement, under the names of *Muscipeta*, *Myiagra*, *Muscicapa*, *Hyliota*, and *Seicercus*. The most striking individuals belong to the first of these subgenera: they are distinguished by their long pendant tails, and beautifully varied plumage; while nearly all the species are confined to the tropics of Africa and India. *Myiagra* is a more homely coloured group, inhabiting the same countries, but extending also to Australia: to this succeeds the European form, conspicuous by its lengthened wings. *Hyliota*, as having the longest bill in this genus, seems to be the tenuirostral type; while *Seicercus*, from its fan-shaped tail, crested head, and lengthened feet, equally indicates the rasorial form. The whole are distinguished from the todies by the shortness of their bill and legs, and the comparative elongation of their wings.

(98.) The restricted genus *Todus* is at once discriminated from the last by having directly opposite characters. With the exception of one of its subgenera, *Platystera*, the whole are natives of Tropical America, where, in conjunction with the tyrant flycatchers, or rather

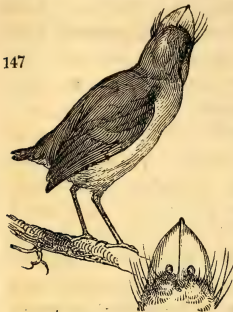


shrikes, they represent the true *Muscicapæ* of the Old World. The todies (*fig. 146. a*) have the bill equally depressed with that of the true flycatchers (*b*), but it is considerably longer, and, instead of being triangular, it is boat-shaped: the wings are so

short and rounded as to be obviously incapable of any other than the most feeble flight; while the legs, which, in the *Muscicapæ*, are so very short, are here much lengthened. Although the toes are equally small, and imperfectly developed, this great difference of organisation in the organs of locomotion carries with it a corresponding diversity of habits. The todies, so much restricted in their powers of flight, depend more upon their legs than their wings. Such of the Brazilian species as we occasionally met with, appear to hop about among the slender branches of trees, something in the manner of titmice, hanging from the twigs, and occasionally making a short flitting with their wings, for about two or three feet, to capture an insect that attempted to escape; but how far this habit is shared by the majority of the genus future observations must determine.

(99.) The *subgenera*, or types of form, intimately correspond to those in the last genus: this assertion we shall elsewhere endeavour to establish, by the most complete analysis that has ever been bestowed upon an ornithological group. We have only space, however, in this work, to enumerate their names and some few of their peculiarities. In the first, which is *Lepturus*, the bill still retains much of that triangular shape characteristic of a flycatcher; but the legs are remarkably long and the wings uncommonly short. This type is connected to

*Todus*, the pre-eminent or typical subgenus, by a beautiful gradation of forms, which leaves not a single gap in the series. In *Todus*, the bill exhibits that length and boat-shaped appearance before alluded to (*fig. 146. a*), together with a remarkably short tail, and delicate although lengthened legs. These latter characters are continued to *Platyrynchus* (*fig. 147.*), but the bill has now become



short, and so broad as to present a miniature resemblance to that of *Eurylaimus*: the legs are long, but so remarkably delicate as to show they are not at all adapted for walking. In the next type, however, represented by the subgenus *Conopophaga*, the legs are not only long, but unusually stout, thus indicating that they are much used, and probably on the ground. The bill is still short, but by no means so broad

or so weak as in the last, while the base is destitute of bristles. Finally comes *Platystera*, the most aberrant group of the todies, and altogether peculiar to Africa.



These birds are known at once from all the American forms, by being larger, more robust in their general shape, and having certain modifications in the form of their bill, wings, and tail, altogether peculiar: a glance at the most typical species, *P. lobata* (*fig. 148.*), at once reminds the ornithologist of *Monacha*, which, together with *Psaris* and *Hyliota*, these birds appear to represent in

their own circle. The union of *Platystera* to *Lepturus* is effected by the *Migniotte* of Le Vaillant\* ; and its

\* Ois. d'Afrique.

connection to *Conopophaga* is equally demonstrated by the *Platystera syndactyla* Sw., an African bird in the British Museum, having merely the rudiments of a tail, with very short, unequal, and syndactyle lateral toes. The circle of *Todus* is thus complete; and we shall now see, by placing them together, how it agrees with the genus *Muscicapæ*: —



(100.) The longest bills among the *Muscicapæ* are found in the typical group; and so, also, are the longest among the todies. Several of the flycatchers in the subgenus *Myiagra* are to this day described as species of *Platyrhynchus* by modern authors, notwithstanding their only resemblance consists in the unusual breadth and shortness of their bills. *Conopophaga* and *Muscicapæ* have the bill small, and but slightly dilated, although they are both remarkable for their length of leg. *Platystera* and *Hyliota* agree in having the ridge of their bills, or the culmen, elevated, and in the outer half being often compressed: their whole appearance, also, is more like to each other than to their own types. *Lepturus* and *Seicircus* differ from all their congeners, by their elongated fan-shaped tails. If, as we strongly suspect, *Rhipidura* is not a genus, but a subgenus, of *Muscicapæ* (in which case it would take the place of *Seicircus* in the above circle), the analogy would be equally perfect, because *Lepturus*, no less than *Rhipidura*, is unquestionably a rasorial type. To place this beyond all doubt, it is only necessary to compare the subgenera of

*Todus* with the orders of birds, and the tribes of the perchers, as in the following table : —

Subgenera of TODUS.	Genus TODUS. <i>Analogies.</i>	Tribes of Perchers.	Orders of Birds.
<i>Todus.</i>	{ Bill lengthened, conic, slightly notched. }	CONIROSTRES.	INSESSORES.
<i>Platyrynchus.</i>	{ Bill short; lip abruptly hooked; notch or tooth very distinct, }	DENTIROSTRES.	RAPTORES.
<i>Conopophaga.</i>	{ Feet syndactyle; head large. }	FISSIROSTRES.	NATATORES.
<i>Platystera.</i>	Bill slender.	TENUIROSTRES.	GRALLATORES.
<i>Lepturus.</i>	{ Feet large; toes cleft; wings short; tail long. }	SCANSORES.	RASORES.

(101.) It is quite unnecessary to add any thing in further proof of the correctness — we may even add the beauty — of this perfect illustration of the theory of representation; and yet, the more it is looked into, the more perfect do the analogies come out. The form of the bill, for instance, in *Todus*, when viewed vertically, is precisely that of a conirostral bird; and this observation equally applies to the typical genus *Muscipeta*. *Platyrynchus*, like all dentirostral types, is that where the bill is always shorter than in the conirostral, and where the tip is most abruptly hooked or bent down. *Conopophaga*, from its large legs, might, on a cursory examination, be mistaken for a rasorial type; but its toes are syndactyle, while its large head and very short tail clearly demonstrate it is, in reality, a representation of the *Fissirostres* and the *Natatores*. *Platystera* and *Hyliota* are the furthest removed from their own types, and their analogies, as a necessary consequence, are more remote than any of the others; but *Lepturus* and *Seicircus* unite, and therefore their analogies blend into affinities: these two subgenera, in fact, are those only which have the feet quite perfect, — that is to say, the tarsus is lengthened, and the toes fully cleft. This structure, and the pointed form of their tail feathers, is in exact accordance with what every ornithologist knows to be the most conspicuous characters of the rasorial order, as the philosophic inquirer will find more perfectly and



fully illustrated in the volume before alluded to. We must now pass on to the three aberrant divisions of this family, namely, the *Fluvinolinæ*, the *Psarianæ*, and the *Querulinæ*.

(102.) The FLUVICOLINÆ, or waterchats, with the exception of one genus (whose situation is still somewhat doubtful), are entirely restricted to the warm latitudes of America, where they seem to represent the stonechats and the wagtails of the Old World. They are strictly ambulating flycatchers, and constitute the rasorial division of this family. The legs are consequently very long, and formed especially for walking; the toes are also long, quite divided to their base, and furnished with long and slightly curved claws. This structure enables these birds to run with great celerity; and they are generally seen on the sides of streams and rivers, feeding upon flying insects which resort to such situations; for they never hunt among trees, and rarely perch: such, at least, are the manners of the typical species; but there are, of course, various modifications of habit corresponding to those, which will now be glanced at, in their structure. The first genus with which we begin the series, is that of *Seisura* \*, differing only from *Rhipidura* by its more lengthened bill and feet. Both these divisions, as well as that of *Seicircus*, have broad fan-shaped tails, which plainly indicates the type to which they belong, although the rank they respectively hold cannot, in our present state of knowledge, be clearly ascertained. Leaving this group, we reach that of *Fluvinicola*, by means of certain black and glossy birds of Brazil, some of which have distinct crests: these latter conduct us to the typical *Fluvinicolæ*, having the legs unusually long, the bill depressed, the tail lengthened, and the plumage

\* I feel by no means satisfied that *Seisura* is naturally separated from *Rhipidura*, although, for the present, I have adopted the group as proposed by MM. Vigors and Horsfield. I have, nevertheless, some suspicion, that all the genera of the *Fluvinolinæ* may prove to be natives of Tropical America, and that *Seisura* is only composed of those aberrant species of *Rhipidura* which pass into the *Fluvinolinæ*.

differently varied with white and black. One of the most characteristic of these singular birds is the *Fluvicola cursoria* \*, of the size of a lark; but some are nearly equal to a small thrush. *Perspicilla*, so called from the naked fleshy lobe which surrounds the eyes like spectacles, is the next genus: this is succeeded by *Alectura*, one of the most distinct and well defined groups in the whole circle of ornithology†: the remarkable developement of the tail feathers in this group only finds a parallel in the genus *Vidua* among the finches, and that of *Gallus* on the rasorial circle. Besides these genera, there are several black and white coloured birds



having a general resemblance to the foregoing, which would seem to enter among the water-chats; yet, as we have not sufficiently analysed the group, we must leave this point undetermined: among these are the white-headed tody of the old writers, which is either a *Tyrannula* or an aberrant *Fluvicola*, as well as the *Muscicapa leucocilla* of Hahn (fig. 149.), which, in outward appearance,

so much resembles a manakin, that it may possibly prove a *representative* of that family in the present circle.

(103.) In the subfamily of PSARIANÆ, to which *Alectura* immediately leads, there are but three ascertained genera. These birds, like their representatives, *Monacha* and *Psarisoma*, depart considerably from the types of this family: the bill is less depressed than any other of the flycatchers, and its structure is altogether stronger

\* Zool. Ill. ii. pl. 46.

† Why M. Vieillot, who first characterised the genus, subsequently abandoned it by uniting it to the overloaded group of *Muscicapa*, has never been explained. This, however, in the present state of science, is of no consequence; since it does not, according to our analysis, belong even to the same subfamily.

and thicker: they are all natives of Tropical America, and are generally found only in thick forests. *Gubernetes* is the genus by which they appear connected to the waterchats, through the medium of *Alectura*. One species only is yet known, the *Gubernetes forficatus*, remarkable for its long forked tail: to this succeeds *Psaris*, where we find nearly all the species coloured alike; that is, they are more or less of a grey or pearl white, with black head, wings, and tail: they remind us immediately of the gulls, and this analogy is one of the most beautiful, when *worked out*, in the whole family. The smaller birds of the genus *Pachyrynchus* immediately follow. Two or three already prepare us for the next division, by the great depression of their bills, and the singularly formed red feathers on the throat.

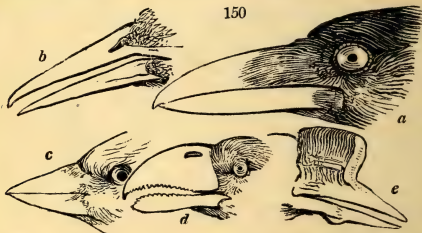
(104.) The singular genus *Querula* is the type of the *Querulinæ*, or the last subfamily of the flycatchers. By some of the Linnæan writers this remarkable bird is classed as a *Muscicapa*; while by others, even among the moderns, it is considered an *Ampelis*. Now, both of these opinions may be reconciled, by viewing it as it stands in our arrangement — the connecting link between these families. All the flycatchers we have hitherto noticed, so far as we yet know, feed entirely upon insects; but we have unquestionable testimony\* that this species live also upon fruits, thus uniting in itself the characteristic of the two families which it connects. In the bill there is much of the form and strength of *Psaris*, but it is wide and more depressed; while the stiff bristles at the rictus betrays its insectivorous habit: the feet are remarkably short for the size of the bird, and are calculated only, like those of the *Ampelidæ*, for perching. All these characters not only point out this genus as of the fissirostral type, but perfect the union of the families of *Muscicapidæ* and *Ampelidæ*.

\* Le Vaill. Nat. Hist. d'Oiseaux de L'Amérique, p. 144.

## CHAP. VIII.

## ON THE CONIROSTRES, OR CONIC-BILLED TRIBE.

(105.) THE CONIROSTRAL tribe is the most highly organised of all those which form the grand division, or order, of PERCHERS ; of which, in consequence, it is pre-eminently typical. The prominent distinctions of these birds, and the characters by which they are separated from the tribe we have just quitted, have more than once been touched upon.\* The general reader will form no inaccurate idea of the contents of this circle, by looking to a crow (*fig. 150. a*), a starling (*b*), a sparrow (*c*), a plantain-eater (*d*), and a hornbill (*e*) ; and associating in his mind all those birds whose conic and slightly notched bills ap-



proximate more or less to one or other of these forms ; in none of which do we observe that degree of curvature and dentation of the upper mandible, so characteristic of dentirostral birds. To define them, however, with scientific accuracy and exclusiveness, is much more difficult ; seeing that, as in all large groups, they possess no one character which is not found among those birds which are connected with, but do not enter into, the circle of the *Conirostres*. That distinction, however, which appears most general, is the strong conic-shaped form

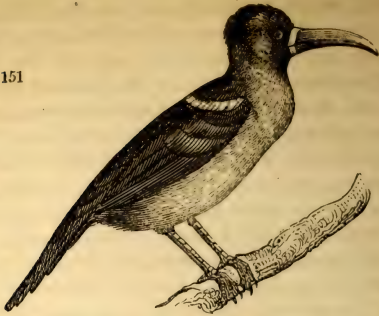
\* Vol. I. p. 339.

of the bill, which is scarcely ever so decidedly notched as that of the *Dentirostres*, with which alone the present group can be confounded. In all the aberrant tribes of perchers, — that is, in the *Fissirostres*, *Tenuirostres*, and *Scansores*, the feet are very short, generally weak, and always imperfect, — they exhibit a structure calculated for one purpose alone, as the woodpeckers; or at most *two*, as in the parrots. But, in the present tribe, the feet are developed in their just proportions, and are suitable both for perching, walking, and climbing horizontally among trees; the toes, in almost every instance, being placed three forwards and one backwards.

(106.) The primary divisions of this order will now be explained, but the mode by which the three aberrant families are united into a circle is not yet known. These aberrant groups we shall denominate the *Buceridæ*, or hornbills; the *Musophagida*, or plantain-eaters; and the *Fringillidæ*, or finches. The two typical groups have been correctly named (from the crow and the starling) the *Corvidæ* and the *Sturnidæ*. The contents of each of these families will now be explained.

(107.) The *Buceridæ*, or hornbills, are well distinguished at first sight, by the enormous size of their bills, which are generally swollen or enlarged at the base, as the name implies, into protuberances resembling horns or nobs. In some species, however, the bill is without these appendages, so that they bear the nearest affinity to the toucans — belonging to the scansorial tribe, which is joined to the conirostral. We have no bird, indeed, which actually unites the two families in so perfect a manner as that by which the toucans are blended with the *Fissirostres* through *Prionites*; yet this latter group fulfils the double purpose of pointing out both affinities: we see in the little power possessed by the toucans of climbing, that nature is about to quit the scansorial structure. Now, we should expect that a bird which might conduct us from the toucans to the hornbills would be of a large size, and that it would present us with some of the gay colours peculiar to the toucans, both in its bill and plumage;

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but that its feet should no longer exhibit the scansorial structure. Now, there is good reason to believe such a bird is in existence, although at present only known to modern writers, by a drawing executed in India, in the collection of Mr. Smith. Both Dr. Latham and Dr. Shaw, describe this bird under the name of the crimson hornbill; and we consider that the figure (*fig. 151.*) published by the latter carries internal evidence of its authenticity. In short, we see in this bird the crimson colour, the long tail, and the dorsal collar so prevalent in the genus *Pteroglossus*, joined to a miniature toucan's bill, with a distinct band at the base, like the *Ramphastos tucanus*, yet with the feet of a hornbill. That this bird, and probably other annectant species, will hereafter be discovered in the vast and still unexplored regions of Central Asia, we have no occasion to doubt.

(108.) The hornbills are a small family, of which, perhaps, the typical form is now only known; they are consequently as much isolated as the toucans and the parrots. They are gregarious, noisy birds, generally of a very large size, and are restricted to the Old World. They are omnivorous, feeding both on animals and vegetables: some, however, seem only to partake of the latter food; while others, upon the authority of Le Vaillant, feed upon carrion. Their bills are enormously large; and generally furnished with an appendage or excrescence on their top, the use of which is unknown; nor has the

internal structure of this member been fully ascertained. Lastly, the feet are generally so very short, as to appear calculated only for perching. United to the scansorial birds by means of the toucans, they would seem to represent the *Rasores*, but the structure of their feet, more imperfect than any of the families in this order, forbids the supposition. This opinion we had long entertained from theory, but it has recently been confirmed by a singular fact in their economy, communicated by an officer long resident in India. It seems that all the species of *Buceros* he has met with in a live state, are constantly in the habit of throwing their food up in the air, and catching it before it is swallowed! It is impossible to imagine a more beautiful insipient development of the fissirostral economy than is manifested by this propensity — a propensity which, divested of its analogical relations, would be perfectly incomprehensible, seeing that the birds are not *obliged* (like swallows, and all the true *Fissirostres*) to catch their food in the air in the first instance.

(109.) The CORVIDÆ, or crows, appear to be that family nearest allied to the last, although the intervening forms are few. The genus *Frigilus*, in fact, is the only representative we at present know of that subfamily which intervenes between the *Buceridæ* and the *Corvinæ*. The whole family, in short, has never yet been analysed; so that the leading divisions alone can yet be made out or stated with any degree of certainty. The little value that can be attached to speculations on the rank of the present genera, founded upon mere *synthesis*, will best appear by looking to those artificial arrangements that place the short-legged rollers close to the long-legged and powerfully constructed grackle (*Gracula religiosa*), — two genera, moreover, which analysis has convinced us do not belong to this family. Nothing, in short, is more easy than to divide a group like this into three, five, seven, or any other given number; but the divisions must always be considered as temporary, until confirmed by analysis. We have not yet carried our investigations so far as to lay before the reader an

arrangement of *all* the genera of this family ; nor will our space admit of an attempt to demonstrate those groups in it which we have already worked out. We shall, therefore, merely intimate what we conceive to be the only natural series, by arranging the genera, in our synopsis, under the following subfamilies : — 1. *Frigillinæ* ; 2. *Corvinæ* ; 3. *Garrulinæ* ; 4. *Crypserinæ* ; and, 5. *Coracinæ*.

(110.) The *Corvinæ*, or typical crows, exhibit the greatest perfection, and the most varied powers, with which nature has invested this class of animals. This superiority consists, not in the extraordinary developement of any one particular organ or quality, but in the union of nearly all those powers which have been separately assigned to other families. This perfection is best exemplified by looking to the economy of the ordinary crows. In every climate, habitable to man, these birds are found. They are as well constructed for powerful and continued flight, as for walking with a firm and stately pace on the earth ; they feed indiscriminately on animals or on vegetables, and, when pressed by hunger, refuse not carrion : hence their smell is remarkably acute. They are bold, but wary, live in common societies, and possess great courage : when domesticated, they evince a power of imitating the human voice nearly equal to that of the parrot : while their cunning, pilfering, and hoarding dispositions are all symptoms of greater intelligence than what is found in any of the families already mentioned. Some of the smaller species so closely resemble the shrikes, that this analogy has been taken for an affinity. In the subfamily of *Garrulinæ*, which includes the jays, these perfections are diminished ; for these birds, like bush shrikes, live entirely in woods, and are seldom, if ever, seen upon the ground : like their prototypes, also, they devour young birds, and are well known in America to be great pilferers of eggs, of which they rob the nests of other birds.

(111.) The *Glaucopinæ*, or rasorial crows, is the only division of this family we have yet analysed with a view to determine its chief generic types ; yet these we can only glance at during the rapid survey we are now com-



pelled to make. As a whole, they are distinguished from all other birds by their short, finch-like bill, the commissure of which is always arched, and sometimes sinuated, like that of a *Fringilla*. The genus *Glaucopis*, which is the pre-eminent type, shows us this structure in great perfection (*fig. 152.*), added to another which is equally indicative of the rasorial structure, that is, strong walking

legs. Following this we have the Senegal *Piapec*, forming our genus *Ptilostomus*\*, intimately related, according to M. Temminck, with his *Corvus gymnocephalus* †, upon this authority we conjecture the last mentioned bird may prove the grallatorial type. The singular genus *Brachystoma*, from New Holland, long since noticed by us, as connecting this group with the jays, leads at once to the finch crows of India, all of which, in our opinion, are merely variations of that type named *Crypsirina* by M. Vieillot. ‡ Some of these, from their close resemblance to *Glaucopis*, have actually been placed in that genus by M. Temminck, who seems to have overlooked the entirely different structure of their legs. The circle is thus closed, and we find that these five types represent the primary divisions of the whole class.

(112.) The following genera we exclude from this family, where they have been placed by some authors:—*Epimachus*, as belonging to the suctorial birds; *Coracias*, as being completely united to *Eurystomus* by two species now before us, the latter being well-known as a fissirostral group; and *Gracula*, as united to *Pastor* among the *Sturnidæ*. The Paradise birds (*Paradisæadæ*), hitherto arranged with the crows, form the most aberrant group of our *Tenuirostres*, and are placed between the hoopoes and the honeysuckers.

\* Birds of W. Af. i. p. 135.

† Pl. Col. pl. 327.

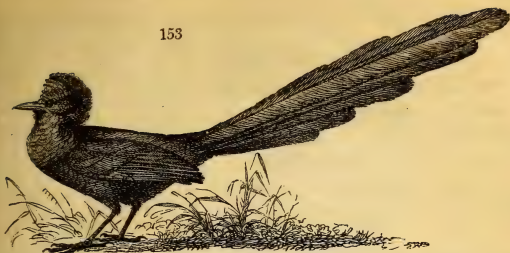
‡ As the name of *Crypsirina* has the priority over that of *Dendrositta*, we have considered it but just to adopt the first, although given to an aberrant species (*C. temia*) which connects this group with *Ptilostomus*.



(113.) From the crows, we proceed to the family of starlings (*Sturnidæ*), but the unarranged state of the last group prevents us from knowing the genus by which this passage is truly effected. The various birds assimilated by ornithologists to our European starling, are generally of the same size: they appear, in fact, like a smaller race of crows, which they very much resemble in manners and in structure: in the latter respect they are evidently much weaker: they seek their food generally upon the ground live in societies, and seem universally to prefer plains frequented by cattle. The three principal groups are well characterised. In the first, the margins of the bill form a distinct angle at the base, which is very wide; the gape extends beneath the eye, and the tips are slightly notched: these are the true starlings (*Sturninæ*). In the second, the bill is shorter, more compressed, and very much resembles that of a thrush, being almost destitute of the basal angle: this subfamily comprehends the true grackles (*Lamprotorninæ*), and is remarkable for the metallic lustre of its dark-coloured plumage. The third, or aberrant division, includes the boat-tails (*Scaphidurinæ*), the hangnests (*Icterinæ*), and the maize-birds (*Agelainæ*), all of which are characterised by a perfectly entire finch-like bill, more or less conic, but of different lengths.

(114.) Commencing with the boat-tails (*SCAPHIDURINÆ*), we have the largest birds in the whole family; those in short, which even a scientific observer might easily mistake for real crows. They derive their common name from the singular structure of the tail, which is graduated, and is rendered so concave on its upper surface, by the oblique folding on its sides, as to resemble the form of a boat. All the true species of this group are natives of America, and resemble the crows in the glossy blackness of their plumage, although they are obviously the rasorial division of this family. But there is a bird from New Guinea, the *Astrapia gularis* Vieil. (*fig.* 153.), which, from exhibiting the greatest development of this structure, might be taken for the type, did not its bill and general habit evince an approximation to the next

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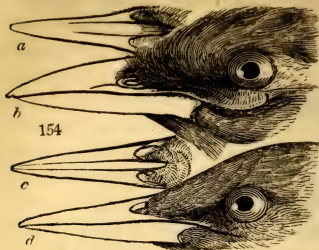


subfamily. The uncommon brilliancy of its plumage has induced all writers, except MM. Temminck and Vieillot, to associate *Astrapia* with the Paradise birds.

(115.) The LAMPROTORNINÆ, or grakles, comprise many smaller groups, whose characters have not yet been investigated; while others, truly belonging, as we conceive, to this family, have been placed with the crows. The magnificent *Astrapia* just alluded to, but for its long boat-shaped tail, would certainly be ranked with this group, of which, after all, it may probably prove to be the rasorial genus. The chief peculiarities of the grakles consist in a strong thrush-like bill, generally notched, but never angulated at the base; the feet are remarkably large and stout; and to the general blackness of their plumage is added the most beautiful metallic lustres of green and blue. The whole group appears confined to the tropics of Asia and Africa, where they seem to represent the American boat-tails. To this group we remove the Australian satin birds (*Ptilonorhynchus* Kuhl), and the maniots, since the *Pastor musicus* at once shows the natural stations and affinities of all these birds.

(116.) To the *Sturninæ*, or true starlings, the passage is easy and natural; since in the maniots we see many of the characters of the grakles united with those of the *Pastor* starlings. In the birds of this subfamily (*fig.* 154.), the bill is much more straight, and the under mandible is considerably thickened at the base, where the commissure forms an abrupt angle. The great strength of the legs indicates the walking propensities of these birds,

which are well known to follow the tracks of cattle, in



order to search after such insects as are disturbed by their grazing. It is singular to witness the association of crows and starlings in the same field,—nearly in the flock, — and almost adopting the same ha-

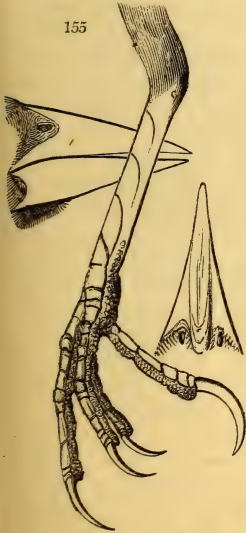
bits; each bird representing the other in its own particular family: in both, the lengthened and conic form of the bill is well adapted for searching after insects in the ground; both walk in the same stately manner, and both seem so attached to cattle and sheep as to rest upon their backs. In the genus *Pastor* (fig. 154. *a, b*), the bill (as in *Lamprotorornis*) is compressed: but in the European starlings, forming the genus *Sturnus*, it is more acute and depressed (*c, d*); the notch also is so faint as to be nearly obsolete. Some of the foreign pastors, leading to *Gracula* Cuv., are furnished with naked wattles, and seem providentially created to destroy those devastating flights of locusts which so often appear on the plains of Southern Africa.

(117.) The AGELAINÆ, or maize-birds, succeed to the starlings; the two subfamilies, in short, are so completely united by the *Sturnella collaris*, or collared starling of North America, that, but for the discovery of the genus *Oxystomus*, it would be difficult to say in which group *Sturnella* should be placed. We now enter upon a group so truly natural, that the confused notions of certain writers regarding their distinctions excites no little surprise. Ignorance of the natural habits of these birds, or a disregard of that peculiarity of structure which would, in some respects, point out their habits, will always produce a generalising but a very artificial arrangement of groups nearly connected, but essentially different. Such, at least, is the only way in which we can account for these birds being considered as part of

the hangnests (*Icteridæ*) by most writers, and actually united to them and the *Quiscalinæ*, all in the same genus! by another.\* The fact, however, seems to be, that nature has distinctly separated the American orioles of Linnæus into three great groups, yet that she unites them so completely by insensible gradations, that unless the whole are analysed, their true distinctions will never be detected. America is the sole region of this family, no less than of the boat-tails and the hangnests; and we are thus enabled to say something of them from personal observation. Like the starlings, the *Agelainæ* almost live upon the ground; like them they associate in flocks; and like them show a constant predilection for open pastures, and the haunts of men and cattle: whenever, during our travels through the wilds of Brazil, we reached the *corals*

(or cattle enclosures), we were sure to meet with these birds; of which many species (in general very obscurely known) are found in all parts of that empire. The primary character, therefore, of the maize-birds is, that they are *terrestrial*, while those of the next family are *arboreal*; and both these peculiarities are rendered sufficiently apparent by external structure. In the maize-birds, the feet, like those of the starlings, are strong and lengthened; and the elevation of the tarsi at once proclaims their habits. This structure is carried to its *maximum* in the Mexican *Agelaius longipes* Swains., and in the North American *Agelaius*

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\* Wagler, *Systema Avium*, where, under the generic name of *Psarocolius*, the whole of the *Scaphidurinae*, *Icterinae*, and *Agelainæ* are looked upon as mere species.

*icterocephalus* Bonp. (*fig. 155.*) There is still another characteristic of these birds: to enable them to retain a firm hold on the smooth stems of the maize and other grain, upon which they feed, their claws are slender and acute; while the tail (always bent downward when the bird is in such attitudes) is frequently worn at its extremity. In the scansorial genus (*Dolichonyx* Swains.), this habit is actually accompanied by the scansorial structure of tail, the feathers of which are rigid and pointed. The most interesting genus in this group is the *Molothrus pecoris* or cow-bunting, of Wilson, — the only bird, except the cuckoo, which deposits its eggs in the nests of other birds.

(118.) The ICTERINÆ, or hangnests, form the fifth and last division of this family, and they are so intimately connected with it, that naturalists have not hitherto been aware of their true distinction. This is also strictly a South American group; gregarious, wary, and ingenious; building long purse-shaped nests, suspended from the slender branches of lofty trees; and feeding on fruits and coleopterous insects: yet, unlike all the preceding genera, these birds are never seen upon the

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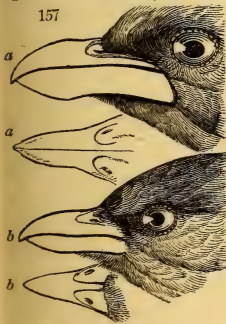
ground: the legs, indeed, are robust, but they are short, and the claws broad, strong, and fully curved (*fig. 156.*): the subordinate types are well distinguished by slight but perfectly characteristic differences in the form of the bill, wings, and tail; the full perfection of the group being seen in *Icterus*, not, as it has been thought, in *Cassicus*, which is the rasorial type. That we have now traversed the circle of this family, and have again ar-

rived at the boat-tails, will be apparent to every one who is acquainted with the genus *Scaphidura* Swains. as now restricted; a bird which has, indeed, been

classed as a *Cassicus*, — for it has the bill of that genus and the boat-shaped tail of *Quiscalus*.

(119.) The African beefeater (*Buphaga*), as we have already intimated\*, is altogether excluded from this family, not only because the whole structure of this curious bird is far different from that so general among the *Sturnidæ*, but because its introduction here would manifestly disturb the progressive and circular series here exhibited. The only reason, indeed, that appears to have influenced all ornithologists in placing it with the starlings, is the propensity which both have to frequent the haunts, and perch upon the backs, of cattle. Now, as crows and ravens are well known to do the same, they might, by a parity of reasoning, be classed in the same group; for a starling is unquestionably more like a crow, than the beefeater is to a starling. In *Buphaga*, we have, in short, the scansorial feet and tail; with the bill (*fig. 157. aa*) so perfectly resembling that of the honeyguide (*bb*), that one of our best ornithologists, without suspecting the affinity, has named a new species of honeyguide *Indicator Buphagoides!* stating

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as a reason, that it has “nearly the appearance of the beefeater’s bill, partially agreeing in the strong and angulated form so conspicuous in that genus.” † This species we have personally examined; and if any doubt had then remained in our mind on the propriety of removing *Buphaga* from the *Sturnidæ*, they would have been immediately dispelled; but we had, in truth, already determined this point,

by a careful analysis of the Sturnine family.

(120.) The analogies of the family we have now investigated, whether in regard to the corresponding groups among the *Corvidæ*, or to its own internal relations, are

\* *Class. of Birds*, i. p. 144.

† *Lin. Trans.* xvi. p. 91.

satisfactory and perfect. We shall first show in what manner the *Sturnidæ* represent the primary types of ornithology, and consequently the tribes of the *Insesores*, or perchers.

STURNIDÆ, or Starlings. — ANALOGIES.

Subfamilies.	Analogical Characters.	Tribes of the <i>Insesores</i> .
STURNIDÆ.	Bill lengthened, more or less conic.	CONIROSTRES.
LAMPROTORNINÆ.	{ Bill more compressed; the culmen curved; the lip distinctly notched. }	DENTIROSTRES.
SCAPHIDURINÆ.	{ Tail unusually developed; commissure sinuated. }	SCANSORES.
ICTERINÆ.	{ Bill very slender towards the end; feed chiefly on soft substances. }	TENUIROSTRES.
AGELAINÆ.	{ Bill very short; wings long, pointed; habits migratory. }	FISSIROSTRES.

The analogies between the two typical groups are so perfect, that they hardly require any further notice. The starlings are the most typical of one group, just as the *Conirostres* are of the other; and both have the most conic bills of that particular modification which is calculated for searching on the ground for insect food; in both also, the upper bill is very slightly notched,—a character which is not found in either of the three aberrant groups of the STURNIDÆ, although their bills are more conic than even that of the starlings. The *Lamprotorninæ* are distinguished from the last by the great compression and curvature of the culmen or ridge of the bill, where we find the notch as deep as in the thrushes and other groups of dentirostral birds; and it is just by these characters that the *Dentirostres* are distinguished from the other tribes of the *Insesores*. In the rasorial groups, the tail is always developed in an unusual manner: this is one of the distinctions of the *Scansores*; and we find the same degree of singularity, under a different form, in the boat-shaped or concave tails of the *Scaphidurinæ*. The most slender-billed birds are well known to be the tenuirostral families, and the grallatorial waders; while the most slender-billed of the starlings are the *Icte-*



*rinæ*, or hangnests. Those which have the shortest bills, on the other hand, belong to the typical *Fissirostres*, — the swallows and night-jars; and such is also the peculiarity of the *Agelainæ* among the *Sturnidæ*. The ornithologist will perceive that the three aberrant analogies, as we have stated on former occasions, are reversed; for the *Fissirostres*, and not the *Scansores*, follow the *Dentirostres*: but it is equally clear, that the boat-tails, of all the starlings, show the nearest affinity to the crows; and that the maize-birds, *Agelainæ*, evince an affinity, equally strong, to the finches. It is also unquestionable, that our first column — of the subfamilies of *Sturnidæ* — forms a circular group, founded upon analysis: we shall not, therefore, attempt to transpose any of its contents, merely to get over an imaginary difficulty in their parallelism with the primary types.

(121.) As a second confirmation of our arrangement being natural, we shall now place the subfamilies of the *Sturnidæ* opposite to those of the *Corvidæ*, and then glance at the results. This table, in fact, will serve as much to verify one family as the other.

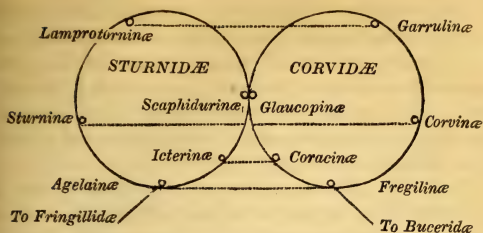
*Analogies of the STURNIDÆ and the CORVIDÆ.*

Subfamilies of the Sturnidæ.	<i>Analogical Characters.</i>	Subfamilies of the Corvidæ.
<i>Sturninæ.</i>	{ Bill lengthened, conic; the notch indis- tinct.	} <i>Corvinæ.</i>
<i>Lamprotorninæ.</i>	{ Bill distinctly notched; the culmen re- gularly curved.	} <i>Garrulinæ.</i>
<i>Scaphidurinæ.</i>	Tail singularly developed.	<i>Glaucopinæ.</i>
<i>Icterinæ.</i>	{ Feed upon soft fruits; feet particularly short.	} <i>Coracinæ.</i>
<i>Agelainæ.</i>	Wings lengthened.	<i>Fregilinæ.</i>

Starlings and crows, as every field naturalist — nay, every common observer — knows, feed in the same manner, associate in flocks, pick out worms from the ground, perch upon the backs of cattle, and partake both of animal and vegetable diet. Equally perfect is the analogy between the grakles and the jays: they are the most richly coloured group in their respective circles; and

both, as a whole, have the upper mandible more curved and deeper notched than any other. It is only among the *Glaucopinæ* and the *Scaphidurinæ* that we find that unusual development of tail so characteristic of rasorial types. The *Crypsirina temnura* in one group, and the whole of the typical boat-tails in the other, verify these to be rasorial types, and consequently analogous. It is at these points that the circles of the crows and the starlings touch and pass into other; and we thus find that it is here the two groups evince the closest affinity: a singular circumstance corroborating this is afforded by the fact of the commissure of the bill, in both groups, being sinuated in the typical genera. From this point, as the affinities recede of the two families, and become more and more distant, so, as a natural consequence, do their analogies also become more remote. Hence, those between the two most aberrant groups, *Icterinæ* and *Coracinæ*, appear to rest only on the fact of both being strictly composed of arboreal birds, having peculiarly short feet, and living principally upon soft fruits. Finally, the most remote analogy is that between the *Agelainæ* and the *Fregilinæ*, because they stand at the confines of their respective circles; and yet, as these two possess the common property of having the longest wings in their respective circles, they must be representations of each other: this structure, we know, is eminently characteristic of fissirostral types; so that the circle of each having now been compared, we find they produce a perfectly uniform result, adding one more to those innumerable instances we have brought forward to demonstrate the LAW OF REPRESENTATION.

(122.) We shall now throw these two groups into their proper circles, because the analogies will not only be at once placed before the eye, but because these circles will also illustrate that apparent transportation of groups we have just before alluded to: —



However this transportation may be hereafter accounted for, there can be no doubt that *Fregilus* is analogous to *Agelaius*, and that this latter genus evinces the closest approximation to the short-billed finches. With these facts before us, we must rest satisfied, and at once proceed to that family which is next in the conirostral circle.

(123.) The FRINGILLIDÆ, or finches, form the rasorial family of the *Conirostres*. They are, indeed, the smallest in size of any in the whole circle; and this circumstance appears to militate against their being representatives of the large gallinaceous birds; and would rather intimate that they were analogous to the *Tenuirostres* among birds, and the *Glires* among quadrupeds. Nevertheless, although they do not possess this indication of the rasorial type, they exhibit nearly all the others: they have, for instance, the hardest and most conic bills; they are the most tame, and the most easily domesticated; they feed almost entirely upon seeds; and there are more crested birds among them than in any other family group of the *Conirostres*. There are also indirect evidences of this analogy, which can by no means be got over. We have already seen that a gradual shortening of the bill takes place from the typical starlings (*Sturninæ*) to the maize-birds (*Agelainæ*), and that some of these latter so closely resemble finches, that only an experienced naturalist can point out their distinction. Then, upon looking to the opposite group of the *Conirostres*, it is no less certain that the hornbills represent

the *Fissirostres*. Besides, it is abundantly evident, throughout the animal creation, that all rasorial groups do not possess the whole of those characters which belong *par excellence* to the type itself; for in the very next tribe to this, we have the equally small sized *Sylviadæ*, although they unquestionably form the rasorial division of the *Dentirostres*.

(124.) The general characters of this family are too well known to every one at all acquainted with birds, to require an elaborate exposition. The sparrow, bunting, greenfinch, goldfinch, all our little thick-billed birds, in short, form a portion, and give a very correct idea of the general character, of this family, certainly the most extensive in their number and interesting in their habits of all the conirostral groups. In general appearance they may be distinguished as having the bill remarkably short, very conic, and consequently very strong. In only one of the divisions (the tanagers), do we find that the upper mandible is distinctly notched and bent over the lower. This structure is continued to a few birds, which border upon the group of tanagers, such as the sparrows; a structure which indicates a mixed diet of insects and seeds. In some the colours are uncommonly rich, and beautifully combined; but in the majority, and entirely among the ground finches, the plumage is dull and homely. Finches are dispersed over all the temperate, and even in the arctic, regions of the world; since, wherever vegetation exists, seeds are produced; and these are the chief, if not the only, food of the *Fringillidæ*. Nevertheless the different minor groups, as we shall presently notice, have different regions assigned to them. The feet are always perfect,—that is, there are three toes before and one behind, all of which are cleft to their base, — so that the birds may freely move both upon the ground and among trees.

(125.) The primary divisions or subfamilies will now be slightly characterised. The typical group is that of *Coccothraustinæ*, composed of the hawfinches, weavers, goldfinches, and linnets. They live entirely

among trees, and have the bill very strong and entire. The second, which is the subtypical, contains the *Tanagrinae*, or tanagers, already alluded to as having a distinct notch at the tip of the upper mandible: these also are almost entirely arboreal. 3. The *Fringillinae*, or true finches, differ materially from the two former: they have generally much smaller, but more perfectly conic, bills; their food consists almost entirely of seeds; and they chiefly live upon the ground. The fourth includes only the larks, or the *Alaudinae*: in these the bill is much more slender than in any of the preceding, and the hind claw is always more or less lengthened. The *Alaudinae* pass into the *Pyrrhulinae*, or bulfinches, having a very short, thick, and swollen bill, much curved above, and whose habits lead them to frequent trees. Comparing these subfamilies with those of the *Sturnidæ*, the last group we investigated, we shall find they represent each other in the following manner: —

## FRINGILLIDÆ and STURNIDÆ. — Analogies.

<i>Coccothraustinae</i> .	{ Typical of their respective circles : notch of the bill small or obsolete. }	<i>Sturninae</i> .
<i>Tanagrinae</i> .	{ Bill arched above, and distinctly notched. }	<i>Lamprotornina</i> .
<i>Fringillinae</i> .	{ Palate of the mouth with an internal knob. }	<i>Scaphidurinae</i> .
<i>Alaudinae</i> .	Bill lengthened and slender.	<i>Icterinae</i> .
<i>Pyrrhulinae</i> .	Bill very short.	<i>Agelainae</i> .

We cannot afford space to enlarge upon such of the analogies as are evident; those, for instance, in the second, fourth, and fifth lines; but although there is no striking *external* character shared in common by the *Fringillinae* and the boat-tails (*Scaphidurinae*), yet it is wonderful how these two groups represent each other; for the *Scaphidurinae* actually possess that internal bony protuberance in the roof of the upper mandible, which so peculiarly distinguishes the genus *Emberiza* from all the finches: a character, moreover, which is only found in the opposite column among the boat-tails. We shall

now take a hasty survey of each of these primary divisions.

(126.) The *Coccothraustinæ*, or, as they may be called, the hardbills, are the most typical of all the finches, inasmuch as they comprise those birds which possess the largest, the most conic, and the most powerful bills. The whole group is arboreal, — that is, they contain such birds only as live entirely among trees, and which do not, like the sparrows and buntings, frequent the ground in search of their food. Our well-known hawfinch (*Coccothraustes europæus*), although not a strictly or pre-eminently typical example, will nevertheless convey a very



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good idea of the general structure of these birds; and the greenfinch (although even less typical) is no bad example. The other native birds which enter into the aberrant genera, are the goldfinches and the linnets. In all these, as well as in nearly all the foreign hardbills, the upper mandible is entire. The whole of these birds are arranged under the five following genera: — 1. *Coccothraustes*; 2. *Ploceus*; 3. *Tiaris*; 4. *Carduelis*; and, 5. *Linaria*; the last of which is connected to the first by means of the green linnet (*Fringilla chloris* of authors), which is immediately followed by the European hawfinch, in the typical genus *Coccothraustes*. No affinities can possibly be stronger: and this at once closes the circle. The genus *Coccothraustes* seems to be distributed in all parts of the world; and its modifications are so remarkable, that we have ventured, after a very close analysis of the group, to designate its subgenera: at the head of the these, and consequently of the entire family, stands the subgenus *Pyrenestes*, at present composed of only three or four birds, peculiar to the little-known regions of Tropical Africa, where many others, no doubt, remain undiscovered. Their bill (*fig. 32. Vol. I.*) is truly enormous, considering the size of the body; for it is frequently as deep and as large as the head, and must be

employed to break the hardest nuts. In the corresponding latitudes of America we have the subgenus *Coccoroborus*, which is united to

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*Pyrenestes* by the Brazilian *C. magnirostris* (fig. 159.), or the *Loxia angolensis* of the old writers. This type is inferior in its bill only to the last, while some of the species so closely resemble

the genus *Pitylus* among the tanagers, that they can only be distinguished by the notch of the bill being very slight, or almost obsolete. *Coccothraustes* appears restricted to the temperate latitudes of Europe, America, and Asia: all the species have long wings; and they appear to be migratory. The two other supposed types are African, and at present but little known.

(127.) The genus *Ploceus* is by far the most numerous, as

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well as the most beautiful, of this division (*Euplectes capensis*, fig. 160.). It is composed of the weavers, — a name given them on account of that surprising skill with which they fabricate their nests; a circumstance of which we have already spoken more at large.\* We have long

had suspicions that this, in truth, is the typical genus of the present subfamily, because it is among these birds we find by far the greatest intelligence and the most social habits, — qualities which are so pre-eminently typical of rasorial groups; and it must be remembered that the *Fringillidæ*, as a whole, is the rasorial family of the *Conirostres*. On the other hand, we must not overlook the circumstance that the weavers feed as much upon insects as upon seeds, — a fact, indeed, which rests not

\* Vol. I. p. 188.

merely upon the assertion of travellers, but on a peculiarity of structure: the margin of the upper mandible is so much sinuated as frequently to produce on each side an absolute festoon, like that seen in the typical tanagers, and which is obviously intended to break in pieces hard coleopterous insects. As we have elsewhere\* entered into many details regarding the subgenera of *Ploceus*, the reader must be content with a hasty glance. The typical species are the largest, and have the longest bills. In *Euplectes*, we have some birds of the most brilliant scarlet and black plumage, remarkable also for the great



size and slenderness of their feet. *Vidua* presents us with those elegant finches peculiar to Western Africa, the males of which, in the breeding season, are ornamented with tails of an extraordinary size and structure, as in *Vidua phœnicoptera* Sw. (fig. 161.). Can this group represent the *Paradisæadæ*? We confess such was once our opinion; and yet we cannot discover how they can be removed from the situation we here assign them, so as to bring them in as the tenuirostral type of the *Coccothraustinaæ*,—a rank we have, for the present, assigned to *Carduelis*.

Leaving the genus *Ploceus*, of which the foregoing are the most prominent forms, we come to the American group of *Tiaris*, a small assemblage of pretty little birds, most of which, as the name implies, are crowned with crests. All the species appear peculiar to America; some show an affinity to *Ploceus*, others to the small tanagers (*Nemosia*), while two or three from Brazil closely resemble the goldfinches. Thus conducted

\* Birds of Western Africa, i. p. 158.



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to *Carduelis* (*C. Americana*, fig. 162.), the passage is easy and natural to *Linaria*, in which there are certainly three or four subgenera: one of these is represented by our greenfinch (*Chloris*). This genus, as already remarked,

leads immediately to *Coccothraustes*, and thus closes the circle.

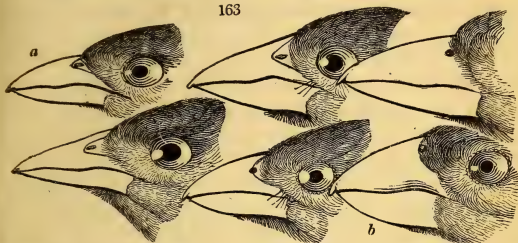
(128.) The TANAGRINÆ, or tanagers, is probably that group which is the most numerous, as it certainly is the most diversified, of all those in this comprehensive family. As the dentirostral division of the *Fringillidæ*, it is typically distinguished from all the others by the bill having a distinct and well defined notch at the end of the upper mandible, the ridge or culmen of which is much more curved than is the gonys; or, in other words, the culmen is more curved *downwards* than the gonys is *upwards*: this inequality, as in the genus *Ploceus*, very much takes off from that regular conic form of bill so highly characteristic of the greater number of the finches; so that the combination of these two characters is, perhaps, the best distinction of the whole group. Another peculiarity of these birds consists in their geographic range; for the whole, so far as has yet been ascertained, are natives of the warmer parts of America, abounding most in those regions which lie nearest the equinoctial line. They are in general small birds, — the largest being intermediate between a sparrow and a thrush, while the majority do not exceed the size of a linnet; some few are even smaller. It is quite evident, from the great strength of bill possessed by some, and the notch, which is conspicuous in all, that these birds feed both upon seeds and creeping insects, picked from the branches of trees; for very few of them are ever seen upon the ground. Their colours in general are bright; and, in a large number, particularly rich and beautiful. The little birds forming the genus *Aglaia*, in fact, are ornamented with

the most vivid hues, or glossed with rich reflections of gold, rendering them inferior only to the humming birds. Some possess considerable vocal powers; and the notes of the subgenus *Euphonia*, as its name implies, are said to be particularly musical. The impossibility, however, of providing the tanagers with their native insect food, has prevented them from ever being brought alive to the European menageries, to which their beauty would render them the greatest ornaments.

(129.) It might be supposed, that the internal arrangement of a group, distinguished by so many peculiarities, both of structure, colour, and geographic distribution, would be by no means difficult; yet the very reverse of this is the case. We may safely affirm, indeed, that it is one of the most difficult to be understood in the whole circle of ornithology: nature seems to have departed, in this group, from that uniformity of progression which is so prevalent in all her works: this remark is not applied merely to the smaller groups, but actually, in many instances, to the succession of species. The comparative strength of the bill, for instance, is so variable in birds of the same subgenus (the lowest denomination of groups that we can trace), that this variation, indicative of genera in other families, is in this no more than a discrimination of sections or species. Nothing can illustrate this fact more than the affinity between *Pitylus* (*fig. 163. b*) and *Tardivola*. Looking to the types of each, we should say they did not belong even to the same subfamily; for the bill of the first is nearly as large as in the hawfinches (*Coccothraustes*), while that of *Tardivola* (*a*) is so comparatively slender, that it seems more akin to the larks than to the tanagers: and yet, between these two extremes or types, we have now before us such a perfect series of graduated forms, wherein not only the bill, but *all* the other subordinate characters of the two groups, progresses in such a beautiful and almost imperceptible manner, that we are actually at a loss to know where *Tardivola* ends, and *Pitylus* begins. No

wonder, then, that some of our best writers, who seem to be acquainted with one or two of the typical examples of *Tardivola*, should place it as a *genus*, in a totally different family. To illustrate this extraordinary union of two subgenera (apparently so widely separated by characters which are usually considered indications of higher divisions), we subjoin the outlines

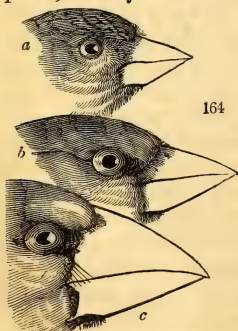
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of the intervening gradations in the form of the bill just alluded to, and which will bear us out in the belief, that, whatever uncertainty hangs over other parts of our arrangement of the tanagers, the proximity of *Tardivola* to *Pitylus* is beyond dispute.

(130.) This foregoing affinity being admitted, we are next to inquire into the cause why such a remarkable variation in the bill should occur in species so closely united. Now, it should first be stated, that nearly the whole of the seed-eating birds of Tropical America are composed of the tanagers, which, in those regions, supply the place of the other finches, so abundant in all parts of Europe. The seeds and hard berries, however, found in our cold and temperate climates, are very few indeed, when compared to the innumerable variety produced in the vast forests of the New World, whether we regard the variety of the species, or the different degrees of hardness they possess. Now, as these small and hard fruits are the appointed food of the tanagers, (for the parrots chiefly subsist upon the larger nuts,) it follows, that an equal diversity of strength should be found in the bill; that organ, in

fact, which is to turn these seeds into nourishment. If there was little variation in the size or strength of the bills of the tanagers, the inevitable consequence would follow, that they would only be able to feed upon seeds or nuts *varying but very slightly in their size and hardness*: and hence it would follow, that innumerable other sorts, which either did not come up to this standard, or much exceeded it, would be left untouched, and, as food to the animal world, perfectly useless; at least, so far as we can conjecture. To prevent, therefore, such a waste of her vegetable aliments, nature has created in the finches a vast family of birds, expressly for the purpose of subsisting upon them; and that these birds should be qualified to partake of all the different sorts, from the softest to the hardest, she has given to these creatures a corresponding variety in the shape and strength of their bills. We are much strengthened in this hypothesis, by observing something of the same principle in operation, although, upon a more limited scale, among the finches of Europe. How great, for instance, is the disparity of size between the bill of our hawfinch, greenfinch, and linnet; and yet these birds, so far from belonging, as is generally supposed, to very distinct and even remote genera, actually



follow each other (according to our analysis of their affinities), without the least interruption, as subgenera. Every one, in fact, must perceive the close relation of the common linnet (*Linaria*, fig. 164. a), to the green linnet (*Chloris*, b), and this again to the hawfinch (*Coccothraustes*, c), with which it might, perhaps, be equally associated, as only a slightly aberrant species. Such a disparity

in regard to the bills can scarcely be found in any other groups in ornithology.

(131.) We thus account for the little reliance that can be placed on the mere *size* of the bills of the tanagers, for determining their genera; but this will not explain the great difference which often takes place in the size and plumage of species, which all writers agree in placing within the limits of the same subgenus: we might take the restricted genus *Pitylus* of Cuvier as an example of this, where some of the species are green, some black, and others grey; and they vary from the size of a sparrow to that of a small thrush. We cannot be accused of not favouring the adoption of new genera, and yet we are compelled to cancel that of *Cissopus*, from our present conviction that it is a mere *sectional* representation of *Lanius* in the subgenus *Pitylus*, which stands at the head of the tanagers. The recent

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discovery, in fact, of its prototype, in the subgenus *Lanius* itself, may be said to demonstrate this view of the subject; for a shrike, discovered by Dr. Smith in South Africa, is so completely like *Cissopus* (*Pitylus picatus*, fig. 165.), that, but for their bills, the two birds might be easily mistaken for the same species; both, in fact, are miniature magpies, and both represent

that well-known bird in their own circles.

(132.) We shall now give a rapid sketch of the views we at present entertain of the natural affinities of these birds, first briefly stating the doubts that still hang over their correctness. These doubts, indeed, may be said to hinge almost entirely upon our not having been able to examine specimens of the *Fringilla Zena* of authors,— a bird which, strange to say, seems not to exist in any of our public museums, and which we have in vain endeavoured to procure for our own. There are several peculiarities in this remarkable finch, which

lead us to suspect that it forms the type of one of the principal divisions among the tanagers, or that it connects our genus *Aglaiia* with *Pipillo*. On the first supposition, *F. Zena* would constitute the passage from the true sparrows (*Pyrgila*) to the subgenus *Tanagra* proper; while, by the second, *Pipillo* would stand intermediate between *Aglaiia* and *Tanagra*, and thus constitute the rasorial genus of the whole subfamily. This latter arrangement certainly appears to us the most likely to be the natural one, in which case, *F. Zena*; will be merely a subgenus, either of *Pipillo*, or of *Aglaiia*; or, in other words, will connect the two. Neither can we, by any disposition we have yet made, discover the circular series of the types of form in the genera *Tanagra* and *Phœnisoma*, chiefly from ignorance of the real affinities of *Arremon*: but for this,—and supposing the tenuirostral types of these two genera to be undiscovered,—we feel some confidence in the series in which we have disposed the remaining groups. We take this opportunity of soliciting, from any of our ornithological readers, the use of a specimen of *F. Zena*, or of those few species which seem to possess the same form.

(133.) The following arrangement of the tanagers, under the foregoing difficulties, must therefore be looked upon for the present as provisional. We consider that the two typical groups or genera are *Tanagra* and *Phœnisoma*; while those which we think aberrant are *Nemosia*, *Aglaiia*, and *Pipillo*. It is only between the two last of these, that we cannot as yet discover any affinity, at least, sufficiently strong to justify the belief that these five genera form a circle “more or less complete;” the difficulty, as before stated, being how to connect *Aglaiia* with *Pipillo*. In taking a slight review of these genera, we shall begin with *Tardivola*, whose absolute connection to *Pitylus* has been already proved. We then proceed to the restricted group of *Tanagra*, where we have all those beautiful birds of a cinereous blue colour, so many species of which we

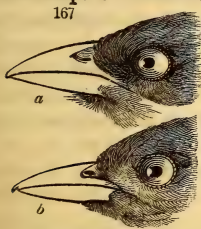
have already figured\* : these appear to pass into the subgenus *Ramphopsis* (*R. coccinea*, fig. 166.), by means of *Lamprotes* : and here (unless *Arremon* forms the tenuirostral type of this division) the genus *Tanagra* terminates. In all these foregoing types, the bill is more or less shorter, stronger, and thicker, than in the



next genus, *Phænisoma*, which seems to be chiefly distinguished from all the subgenera of the last, or *Tanagra*, by a much more lengthened and a more slender bill. We enter *Phænisoma* by the very singular form, now first named *Lamprotes* : its long wings, short feet, and glossy plumage, seem to point it out as a fissirostral type, while the short and soft frontal feathers remind us of *Ramphopsis*. After this, we place the *Phænisomæ* proper, or the red birds, many of which have long wings, and all, like *Lamprotes*, have the bill lengthened : from these to *Tachyphonus*, the passage is very gradual. *Tachyphonus* is chiefly distinguished by its lengthened conic bill, compressed on the sides, and often distinctly festooned in the middle of the upper mandible. The genus *Lanio* of Vieillot is obviously only a typical species of this subgenus, and we, therefore, do not adopt it : in the aberrant species, such as *T. niger-*

*rima*, and some others, this festoon disappears ; and we are thus prepared for *Leucopygia*, a new subgenus, characterised by having the bill short, much compressed, and quite entire (fig. 167. a). It is by this form, altogether peculiar from its entire bill, that we

suspect the genus *Phænisoma* passes into the next. Such



\* Birds of Brazil, pl. 37—42.

are the internal types of form which appear to constitute some of the subgenera of *Tanagra* and *Phœnisoma*: both, collectively, comprehend all the largest of the tanagers; and they are, in general, so well marked with nearly all the characters of the family, that the experienced ornithologist will be at no great loss to distinguish them. We shall now proceed to the remaining groups.

(134.) The aberrant TANAGRINÆ, according to our present views, are comprised in the genera *Nemosia*, *Aglaiä*, and *Pipillo*: these we shall shortly notice. It seems evident that *Leucopygia* is the most aberrant form among the *Phœnisomæ*: its unusually strong feet, with its short, entire, and compressed bill, leave us in no doubt that it is of the rasorial type; but whether it enters among the last-mentioned genera, or into the first of the aberrant groups, that is, *Nemosia*, is a matter of much uncertainty. The nearest affinity to this, in the genus we have just quitted, appears to be shown by *Tachyphonus auricapillus*\*; while, on the other side, this bird seems to be equally related to *Nemosia* (fig. 167. b). This genus,—which, from its wings being longer, or at least more pointed than in any others, we take to be a fisirostral type,—is composed of very small slender-bodied birds, so much resembling warblers, that they have been classed as such by all writers; and even M. Vieillot, who has himself proposed the genus, has actually described the most typical species under the name of *Sylvia ruficapilla*.† They are distinctly separated, however, from that family, by the thickness of their under mandible which is fully as stout as that of the upper: the feet are small, and rather short; and the wings, which reach to half the length of the tail, have the first and second quills but very slightly abbreviated. These appear to be the typical distinctions; but as it is by this genus that the tanagers, to all appearance, pass into the haw-

\* The *Tanagra auricapilla* of prince Maximilian, and the *T. Suchii* of our former Monograph.

† La Vauvette à tête rousse. *Sylvia ruficapilla* Gal. des Oiseaux. The figure represents the legs double the length they are in nature.



finches (*Coccothraustinæ*), by means of the little genus *Tiaris*, already mentioned, so we find many birds which exhibit a union of the characters of both. The bill becomes more conic, and frequently entire, but the wings retain their pointed form, or rather the external quill is very slightly abbreviated. One species in our possession has so much the structure and habit of *Leucopygia*, that, but for a very minute and scarcely perceptible notch near the tip, and the abbreviation of the inner toe, we should have had no hesitation in associating it with *Leucopygia* rather than with *Nemosia*. The next genus which appears to succeed in the series of forms is *Aglaiä*, which is certainly one of the most natural groups in the family, whatever difference of opinion may exist regarding its true situation. It is composed of the smallest and the most beautiful of all the tanagers; and is chiefly distinguished by a small, short, but somewhat thick-shaped, notched bill, with the frontal feathers very short, thick-set, and almost concealing the nostrils; the feet are small; the wings rather lengthened and pointed; and the tail even. Some of these characters belong to *Nemosia*, whose more lengthened and slenderer bill is possessed by the *Tanagrella tenuirostris* \* hereafter described; a bird which, on account of its peculiar bill, we have separated from the typical species. *Euphonia*, for the same reason, may form another subgenus, well distinguished by the bill being uncommonly broad at its base, and suddenly compressed on its sides. Whether we are to consider the *Fringilla Zena* as another type of form, or subgenus, in this group, must be left for future investigation; but a bird in our collection, having the bill of *Euphonia*, but the colours and markings of *F. Zena*, excites a strong suspicion that both are connected by affinity; and yet, even admitting this, we are at present quite unprepared to show any relation between the types of *Aglaiä* and *Pipillo*, the last genus which we place in the circle of the *Tanagrinæ*. *Pipillo* (fig. 168. a) evidently partakes as much of the finches as of the tanagers.

\* *Motacilla velia* Gm.?



Like *Arremon* (fig. 168. b), its bill has the more conic form peculiar to the former, although its bright colours, and the small notch in the upper mandible, give it an appearance of belonging to the latter. That *Pipillo* is either the last form in the tanagers, or the first in the finches, we consider to be beyond all doubt; while the strong mutual resemblance of *Pipillo arremon* and *Tardivola* (c) shows

their close connection. Upon a former occasion\* we associated *Pipillo* with the finches; but more consideration, and the acquisition of two or three new species from Brazil,—one of which evinces some relationship in size and structure, although not in colours, to *Aglaia*,—induce us to remove the group within the circle of the *Tanagrinae*. These species we shall subsequently describe; and, having now candidly laid before the scientific reader the few difficulties which at present impede our further analysis of this interesting group, we shall at once proceed to the next.

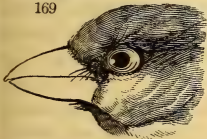
(135.) The FRINGILLINÆ may be correctly termed ground finches; since, with scarcely any exception, they are all birds which habitually walk or hop in such situations, and derive their chief sustenance from seeds of grasses and other plants. Like the generality of birds which live upon the ground, the plumage of nearly all the *Fringillinæ* is of an earthy colour, that is, of different shades of brown, variegated with blackish spots or markings; while their legs are light coloured. These peculiarities, although they cannot be well taken as strictly *scientific* characters, are yet so prevalent in this group, that the very aspect of the individuals, to the experienced eye, will at once show to which of the primary divisions of this family they naturally belong.

\* North. Zool. ii. 260.

The geographic distribution of these birds is chiefly in the cold and temperate regions of Europe, Asia, and North America ; very few, in comparison, are found in South America ; and none have yet been discovered in Australia. The sparrows, the buntings, and the chaffinch, of our own country, come within this circle, and afford a good idea of the whole group.

(136.) The two typical genera of this subfamily are *Fringilla* and *Emberiza* : the three aberrant appear to be *Pyrgita*, *Plectrophanes*, and *Agrophilus*. Some uncertainty hangs over the rank of the latter ; that is to say, whether it is the representative of a subgenus or a genus, in the sense in which we use these terms. As for the others, they may be considered as demonstrable, although we cannot afford the space necessary for proving them so. This, indeed, is hardly necessary ; for the gradations of forms between the sparrows (*Pyrgita*), chaffiches (*Fringilla*), buntings (*Emberiza*), and long-

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heels (*Plectrophanes*,) are well known to every ornithologist who is acquainted with these groups. The sparrows (*Pyrgita*), as being that genus which borders upon the tanagrine circle, is that only

which has the upper mandible slightly notched, and the culmen rather more curved than the gonys (*fig.* 169.). So little attention has been hitherto paid to these birds, either by collectors abroad, or naturalists at home, that comparatively very few species are yet known. The great similarity of plumage which runs through them has perplexed our systematists, while the dulness of their colours has deterred the professional collector from transmitting them to Europe as articles of profit. Hence it is that we cannot, as yet, point out, with any degree of certainty, the subgenera. Not so, however, with the genus *Fringilla*, of which we have ventured to designate four of the types, namely, *Fringilla*, properly so called ; *Zonotrichia*, the American chaffinches ; *Ammodramus*, the sandfinches ; and *Chon-*

*destes*, the cornfinches. The fifth type is probably represented by the *Fring. Iliaca* of Wilson. (pl. 22. f. 4.) The discovery of a most singular bird from the interior of Brazil, having the general structure of *Ammodramus*, but with the bill of *Emberiza*, establishes the passage from the chaffinches to the buntings: this subgenus we have named *Leptonyx*. We long suspected that the buntings of Asia and Africa formed a distinct group from those of Europe; and we have now separated them, under the name of *Fringillaria*. Of *Plectrophanes*, there are only three or four species, the most beautiful of which is that which has been figured\* under the name of *P. picta*; while the best known is the snow bunting of America and Europe. We have recently procured a specimen of a very curious African bird, termed a *Ploceus*, by Dr. Rüppell, but which evidently belongs to this subfamily: its characters, however, particularly in the bill, will not permit its being associated with any known genus; and, as it seems intermediate between *Plectrophanes* and *Pyrgita*, we have, for the present, so placed it in our arrangement, under the generic name of *Agrophilus*.

(137.) The ALAUDINÆ, or larks, are clearly united to the ground finches by the genus *Plectrophanes*, which has the bill of *Emberiza* united to that structure of foot so peculiar to the birds composing the present group. The form, indeed, of the larks is so peculiar as to prevent their being confounded with any of the conterminous groups. The bill is still conic, but it is conspicuously lengthened and slender; while the legs, exclusively formed for walking, have the claws uncommonly straight and lengthened, more especially the hinder one. Four of the subgenera are strikingly characterised; but the fifth, or that which leads immediately to *Plectrophanes*, is still undetermined; very probably it is the genus *Alauda*, represented by the common skylark, where the wings are pointed and the tail forked; but in *Calendula* both these members are rounded. The crescent larks of Africa are distinguished

\* North. Zool. ii. pl. 49.

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by their bright yellow or orange throat, and have received the generic name of *Macronyx* (*M. Capensis*, fig. 170.). From the enormous length of their hind claws, (a) they obviously represent *Sturnella* in the circle of the *Agelainæ* (fig. 155.); and, if the two groups are compared, they will be found in parallel situations. The genus *Certhi-*

*lauda* differs from all the foregoing by the length, slenderness, and curvature of its bill: this leads us to suppose it is the tenuirostral type, for it is certainly more removed from the typical larks (*Calendula*) than any form yet discovered. *Myrafra* and *Brachonyx*, according to our analysis, appear to be aberrant species between *Calendula* and *Agrodroma*, and are therefore not primary forms. Hitherto no example of this subfamily has been found in Tropical America, although one or two species, common in the Northern States, seem to come into the fissirostral genus *Alauda*.

(138.) The PYRRHULINÆ, or bulfinches, is the last division of this family. Their very short bill, the breadth of which, unlike nearly all the other finches, is often greater than its thickness, together with the large size of its head, and the shortness of the feet, seem to point it out as the fissirostral division. In addition to these characters, nearly the whole of the genera have the commissure of the bill very much curved, and the upper mandible, or rather the culmen, arched from its base. The first genus we enter upon after quitting the larks, is *Pyrrhulauda*, a little group of birds peculiar to the tropical regions of Africa and India, exhibiting the feet of a lark with the bill of a *Pyrrhula*: to this genus we originally gave the name of *Megalotis* \*, on account of the great size of the ears, or rather of the space over which the ear-feathers spread; but as that name has been already given to a division of the genus *Canis* among quadrupeds,

\* Zool. Journal, iii.

we now substitute that of Dr. Smith's. This group seems to lead to the typical genus *Pyrrhula*, of which our common bulfinch is a good example. We do not now consider the American species, or the genus *Corythus* of Cuvier, in any other light than as aberrant examples of this typical form ; the latter bird obviously leading to the genus *Psittarostra*, of which only one example, found in the Pacific Islands, is yet known. *Crithagra* is rather a numerous genus, nearly all the species being green above and yellow beneath, confined to the Old World ; while the crossbills, constituting the restricted genus *Loxia*, seem more allied to this group than to any other among the *Fringillidæ*.

(139.) The MUSOPHAGIDÆ, or plantain-eaters, according to our arrangement, constitute the fifth great division of the conirostral tribe of perchers. We denominate the group after the most conspicuous genus which it contains, although it is by no means clear that is the real type of the whole family. As intermediate between the finches and the hornbills (the first being the smallest, and the second the largest birds of this tribe) : we consequently find a similar disparity in the bulk of the different birds which enter into this family. Those which betray their affinity to the bulfinches are small ; while others, whose size and peculiar structure assimilate them more to the hornbills, are of a size proportionate to those birds. With the exception but of one genus, they all possess a short, but very strong and thick bill, more or less curved on the top ; the cutting margins being minutely serrated, like the teeth of a saw : by this structure the Chilian *Phytotoma*, as we are informed by Mollini, " cuts off the plants upon which it feeds, close to the ground, as if it had been done with a saw : " now, as this serrated bill is characteristic of nearly the whole family, it seems to imply an economy altogether peculiar to this group. The food of this remarkable division of birds seems to be purely vegetable, and of the most tender and delicate description : the violet plantain-eater (*Musophaga*) is stated by M. Isert, its first discoverer,

to live principally on the fruit of the *Musa*, or plantain tree; while the touracco birds, according to M. Le Vaillant, feed only upon soft fruits. It is singular to observe that the bill in this family (in outward appearance much stronger than that of the finches) should yet be employed in procuring the softest vegetable food; while the short bill, posterior nostrils, hopping gait, and purely vegetable food of *Musophaga* and *Corythaix*, are all exemplified in such birds as *Buceros galeatus*\*, and proclaim the affinity of the plantain-eaters to the hornbills. The old Linnæan writers, indeed, seem to have had much clearer notions on this subject than some of the moderns; for Dr. Shaw, in his last work, places *Musophaga* close to *Buceros*, and even points out its affinity to the touracco birds (*Corythaix*).

(140.) On looking to the feet of this family, nature appears to have varied their construction in every possible manner, — a clear proof that characters drawn from these organs often deserve only a secondary consideration. It is always in tenuirostral groups, whether large or small, that the greatest variation of the toes is observable. The whole of the waders furnish a striking example of this fact: and we see it again in the *Halcyonidæ*, in the genus *Apternus*, and other minor divisions. In fact, this variation must inevitably take place *somewhere*, or the feet of all birds would be the same; and we accordingly find it in those groups which are equidistant from two different types, and this is precisely the situation of the tenuirostral type in ornithology. But to proceed. In the genus *Colius*, we have all the four toes brought forward: in the touracco birds (*Corythaix*), the outer toe, as we have already so fully explained †, is capable of an outward direction. In *Phytotoma*, the four toes appear to be arranged like those of the finches; but in *Hyreus* (*fig.* 171.), the very next genus, the toes are only three. No two genera; in fact, agree in the formation of their feet; yet all present such a peculiarity of

\* Lin. Tr. xiv. p. 579.

† Class. of Birds, i. p. 151.



general structure, that the unprejudiced zoologist immediately perceives they form a truly natural group.

(141.) The economy of these birds, so far as they have been observed by travellers, is directly against

the theory of their being likened to the gallinaceous order. The Chili plant-cutter builds on the highest trees ; while the African touracco (*Corythaix* Ill.), whose manners particularly engaged the attention of the indefatigable Le Vaillant, perches only at the extremities of the highest branches of the forest trees, rarely descending sufficiently low to come within gunshot. As to the anatomical structure of the touraccos, the admission of M. Cuvier, that they only present “ quelque analogie avec les gallinaces ;” for that the external toe is versatile, and they have not the notched sternum of those birds, is directly opposed to the theory of these birds leading to the *Gallinacea*, and if this needed further confirmation, it is corroborated by a remark by Mr. Yarrell, who dissected a touracco, living some time in the Zoological Gardens.\*

(142.) It is clear, from the foregoing remarks, that the apparent disproportion of size in the birds we associate in this group is not greater than what would be expected ; and, indeed, were it otherwise, we might fairly entertain doubts whether our arrangement was correct. Between a family of small birds like the *Fringillidæ*, and another of such large ones as the *Buceridæ*, there should be a graduated scale, or at least some in the intervening group should be small, some middle-sized, and some large. Now, this gradation actually takes place in the birds composing our present family. The size and entire aspect of *Phytotoma* is that of a bulfinch. *Colius* also, in this respect, as well as in its bill, unites the character of a *Fringilla* and a *Musophaga*. *Hyreus*, a bird we have not seen, and of which no speci-

\* Zool. Journ. No. xv. p. 319.



men, we believe, is in Europe, appears to be rather larger than a thrush; some of the touraccos, forming the genus *Corythaix*, are not larger than a magpie, and are fully equal to some of the small hornbills; while *C. gigantea*, the last of the group, is not inferior to the middle-sized *Buceridæ*. The *Buceros galeatus*, already mentioned, is probably a distinct type in its own family; and seems to be that which, both in form and habits, — for it is described as entirely frugivorous, — completes the union of the two families.

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## CHAP. IX.

### ON THE TRIBE OF SCANSORES, OR CLIMBING BIRDS.

(143.) WE now enter upon the SCANSORIAL ORDER, comprising all those families whose feet are more particularly organised for climbing trees; and whose different modifications of structure have been already so fully explained.\* These members, — excepting in the genus which unites the *Scansores* with the *Rasores*, — are particularly short, for they are never used to walk upon the ground. With the exception of one family, the whole have the toes placed in pairs, — that is, there are two before and two behind, — a peculiarity which renders them of easy determination, notwithstanding the many and striking variations in the form of the bill and wings. The whole of these birds are naturally arranged in the following primary divisions or subfamilies: — 1. The CERTHIADÆ, or creepers; — 2. The PICIDÆ, or woodpeckers; — 3. The PSITTACIDÆ, or parrots; — 4. The RAMPHASTIDÆ, or toucans; — and, lastly, the CUCULIDÆ, or cuckows. These families, collectively, form a complete circle; the

\* Vol. I. p. 133.

junction of the last with the first being effected by the great hollow-billed genus *Phœnicophæus*, and by *Sythrops*, the Australian genus of toucans. If we consider the woodpeckers as the most perfect of all climbers, they will constitute the typical group; for, although the parrots possess the greatest intelligence and the most varied organisation, they do not excel in that particular quality which constitutes the perfection of the scansorial structure: we must, therefore, consider them as the representatives of the *Dentirostres*, and of the hawks,—an analogy fully borne out by the structure of their bill: these two, therefore, form the typical and the subtypical groups of the entire circle. The great head and large size of the toucans, independent of their often catching their food in the air, plainly indicate the fissirostral type. The cuckows, which are the most imperfect climbers, are therefore the most aberrant; while the *Certhiadæ*, or creepers, represent the scansorial division, as already intimated. We shall now take a hasty glance at each of these families, the minor groups of which will be systematically defined in the subsequent synopsis.

(144.) The *CERTHIADÆ*, or creepers, of all other climbers, evince the closest affinity to the suctorial order of *Tenuirostres*, like them they are generally of a small size; like them, they have a very slender, delicate bill; and in both groups the hind toe is much developed. Some of the honeysuckers, as the *Entomiza cyanotis* S.\*, climb trees; and the similarity of *Clymasteris mysticalis* to a *Meliphaga* is so great, that no less an ornithologist than M. Temminck has actually mistaken it for such. Nothing, therefore, can be more conclusive, if authority were alone to decide the question, than that the *Scansores* pass into the *Tenuirostres* by means of the *Certhiadæ* in one, and the *Meliphagidæ* in the other.

(145.) The primary divisions or subfamilies of the *Certhiadæ*; did our space admit of their full elucidation,

\* Lewin's Birds of New Holland, pl. 4.

afford one of the most ample proofs that could be adduced in favour of those principles of the natural system for which we contend. In our systematic arrangement the several groups will be so arranged, and we can only, in this place, glance at a few general features of the whole group. Nearly all the typical species are confined to that continent of forests, Tropical America; but the common English creeper (*Certhia familiaris* L.) will give the student a very good idea of their general structure. The nuthatch, with its long pointed wings, shows us the fissirostral type; while the true wren of our own climate exhibits that form which is the most aberrant. With the exception of these three generic types, and of *Tichodroma*, confined to the South of Europe, the remainder, eighteen, are exotic; thirteen of which are exclusively confined to Tropical America. In this number we exclude the following genera, introduced among the *Certhiadæ* by some authors, because, upon analysis, we find they belong to other groups, in which they merely represent the creepers:—1. *Upupa*, as being the scansorial type of *Promerops*;—2. *Orthotomus*, as being the same in the circle of the typical warblers (*Sylvianæ*);—and, 3. *Mniotilta*, from holding the same analogical station among the American *Sylvicolæ*.

(146.) The CERTHIADÆ arrange themselves, with the above deductions, into the following subfamilies:—1. The *Anabatinae*, or redtails, where the tail, although somewhat rigid, is never acute, and the two outer toes are not united;—2. The *Certhianæ*, or typical creepers, having the tail ending in sharp and often horny points; both groups, with one exception, being confined to Tropical America;—3. The *Buphaginae*, or ox-peckers, where the bill is short, thick, and the tail like the first division;—4. The *Troglodytinae*, or wrens, having longer and more slender bills and toes;—and, 5. The *Sittinae*, or nuthatches, where the toes are enormously developed for the size of the body, and the bill straight and somewhat wedged-shaped; thus opening a passage to the typical woodpeckers.

(147.) The true wrens (*Troglodytes*) have such a slight development of the scansorial powers, that ornithologists have very generally placed these little birds with the goldcrests, or true warblers. The analysis, however, subsequently given of this last family, leaves no doubt in our mind, that their natural situation is in the present group. A very singular part of the economy of our common wren has not, we believe, been made known. If attentively observed, it will be seen that, on flying into a hedge or thicket, it almost invariably *enters* that part nearest the ground, and *emerges* towards the top; if watched within such retreats, its progress is always *upwards*; and although it hops, rather than climbs, still the elongation of the hind toe is evidently intended to assist its progressive ascent, slight, indeed, but continued. Again, it is perfectly clear, that wherever the American wrens (*Thriothorus* Vieil.) are placed in a natural arrangement, ours must follow; for a separation so forced, would, in our opinion, be sufficient of itself to shake the very foundations of any system in which the two groups were widely separated. Lastly, it will appear, upon analysis, that the true wrens are actually represented among the warblers, by a genus (*Prinia*) hitherto stationed among the climbing creepers. In this rapid sketch of the animal kingdom, we are compelled to pass over details; but we must occasionally notice such as these, not only to give the reader a sufficient insight into our own views, but to explain upon what grounds we venture to question the correctness of all those eminent naturalists who have gone before us.

(148.) The structure of the PICIDÆ, or woodpeckers, constitute them the most perfect of all the climbing birds, for nature has rendered their whole organisation subservient to this particular power. The feet, although very short, are unusually strong; the nails are broad and crooked, and the toes placed in pairs,—that is, two forward and two backward. As an additional and a powerful support to these birds in their rapid and perpendicular ascent up the trunks of trees, their tail-

feathers terminate in points, and are uncommonly hard; so that this member, being pressed against the bark, is a further help to the bird in his perpendicular attitude. The bill, no longer slender, is now destined to be employed in the laborious operation of penetrating hard wood, or of stripping off the bark of forest trees, and is accordingly adapted in the most beautiful manner for such a purpose; it is perfectly wedge-shaped, furnished with regular-sided angles, and in one species (*Picus principalis*) is nearly the colour and consistency of polished ivory; hence it has received the name of the ivory-billed woodpecker: the tongue has also a peculiar formation; it is worm-like, barbed at its point, like the head of an Indian spear, and is capable of being thrown out to a great length: by this mechanism the bird can introduce it into holes and crevices, or even under the loose bark of old trees, infected by those peculiar insects which it is the province of the woodpeckers to destroy. As nature advances progressively to this perfection, so does she recede from it: some of these peculiarities are lost, and others very much diminished, in all the remaining climbers we shall presently notice.

(149.) The divisions of this family are strongly marked; because, as some few intervening forms are wanting, the circle is, in one sense, incomplete. Thus the nuthatches (*Sittæ*), although clearly approximating to the woodpeckers, are not directly united to them: neither does the intervention of the wryneck, with its long wormlike tongue, or of *Oxyhrychus*, with its acute bill, do more than indicate the broken links of the chain. The absolute connection between the true woodpeckers (*Picianæ*) and the subfamily of barbuts (*Buccoinæ*) is unquestionably established by two very singular little birds,—one being the minute woodpecker of Linnæus (*Asthenurus* Swains.), the other a barbut (*Picumnus* Tem.). But before proceeding further, let us pause a while on the genuine woodpeckers, as their natural arrangement *among themselves* deserves parti-

cular attention ; we only regret that our confined limits prevent us from giving more than an abstract of their internal relations.

(150.) The true woodpeckers (*Picianæ* Swains.) are typically represented by the great ivory-bitted species already noticed. Here the upper and the lower ridge of the bill exactly correspond in their inclination towards the tip, rendering the bill a perfectly straight wedge. This construction is rendered still more perfect by a ridge, forming a strongly carinated line, which runs parallel to the culmen, and is situated nearly half way between that and the external margin of the upper mandible. The crests of these birds are very short, rigid, and turned upwards : but their chief distinction, as a genus, rests on the structure of the feet, the hinder external toe being manifestly longer than that in front : this peculiarity is even extended to such aberrant species as have one of the small toes wanting, as the two northern species, *Apternus tridactylus* and *arcticus*. To this group, therefore, we restrict the generic name of *Picus*, and it includes all the British species excepting *viridis*. In the next group, *Chrysoptilus*, we find a diminution of these typical excellences ; the bill, as in our common green woodpecker, is still nearly straight, but the lateral ridge, before alluded to, is placed close to the culmen, and the hind toe is either of equal length or slightly shorter than the fore toe : the crest, although still short, is less rigid, and not so much developed. The colours of these birds are always gay ; green, and not black, predominates ; and most of the typical species have the quills of a beautiful golden hue, — a circumstance which suggests the generic name of *Chrysoptilus*. The third is a highly elegant genus : the bill is now no longer straight ; the culmen, or upper ridge, being evidently more arched than the lower ridge, or gonys ; and this latter is particularly short, owing to the prolonged advancement of the chin, which occupies full one half of the under mandible. The lateral ridge of the upper mandible is as in the last

genus; but the anterior toe is now become obviously longer than the hind toe: the crest is long, formed of loose feathers, and, like the rest of the plumage, is particularly soft; hence we have denominated the genus *Malacolophus*. The fourth genus we long ago named *Colaptes*, and as this has been generally adopted by ornithologists, we need only here observe, that it is distinguished from the last by the greater curvature and compression of the bill, and by the disappearance of the ridge on the upper mandible; thus assimilating the group to the *Tenuirostres*, and exhibiting the weakest structure among the whole of the woodpeckers. The fifth and last genus (*Melanerpes*) may not unaptly be called swallow woodpeckers, for they resemble those birds in their migratory habits, their long wings, and their black glossy plumage, destitute, in the typical examples, of spots or bands: yet here we find nature has began to return once more to her original type: the ridge on the bill is again apparent, at first but slightly, but finally very distinct; this member, likewise, although not straight, is less arched than in *Colaptes*; the two greater toes are of equal length; the wings long and pointed, and the third quill equal or longer than the fourth; the black and white plumage, seen only in the typical genus *Picus*, is again assumed, until the two groups are blended together by such birds as *Picus rubriventris* Vieil., *P. varius* L. &c.; so that the circle of the true woodpeckers is rendered more complete, perhaps, than any other in the whole class of birds. The primary divisions thus appear to be three: the first having the bill equally angulated, and the hinder toe longest; the second, with the angles unequal, and the two longest toes of the same length; the third has the culmen curved, the angle obsolete or wanting, and the hinder toe shortest. Very many of the subgenera of these five principal forms have been determined, and their chief characters will be found in our systematic arrangement.

(151.) To the *Buccoinæ*, or barbuts, forming the second

principal group of the woodpecker family, we are conducted by the minute woodpecker (*Asthenurus minutus* Sw.), whose black and spotted head indicates an affinity to *Malacolophus*. M. Temminck, having discovered a small barbut which is closely related to this type, has thought it expedient, without any assigned reason, to reject our name, and substitute a new one of his own. The barbuts have the same constructed feet, and possess the same property of climbing, as the woodpeckers, but in a much less degree: their tail feathers are soft, and of the ordinary construction: the bill, in some, is very strong, straight, and compressed; in others it is greatly depressed; and in one group, short and toothed. Mr. Burchell was the first naturalist who discovered the affinity of these singular birds to the woodpeckers; having repeatedly heard their loud tapping in the forests of Southern Africa, and witnessed their dexterity in climbing trees: in the straight-billed or typical barbuts (*Bucco*), we have the predominant colours of the parrots—green, red, blue, and yellow variously combined; while the black and red plumage of the tooth-billed division (which is the true type of the whole) corresponds with that of the most perfectly formed woodpeckers: a third group, whose precise station is not yet known, represents these birds in South America.

(152.) The other genera whose climbing habits have induced naturalists to place them with this family, are *Yunx* and *Oxyrhynchus*. The first of these types belongs exclusively to the Old World; and two species have been discovered: the latter seems to be the representative of it in America, and is at present confined to a single species.

(153.) The Parrots constitute the subtypical division of this tribe, wherein the powers of climbing are less developed. If any group in nature be isolated, it is this. Possessing in themselves the strongest characteristics, there is no bird yet discovered which presents any point of connection to them: approximations, indeed, are certainly made towards them by the tooth-billed barbuts



(*Pogonias*); but there is still a gap, which no genus yet discovered is calculated to fill up. On considering the relative difference between the barbuts and the parrots, we should say, theoretically, that of all the five groups among the latter, one only remains to give us the typical structure. The form, manners, and peculiarities of these elegant birds are too well known to be here repeated. They climb by grasping; and the feet possess the additional faculty of conveying food to the mouth,—a peculiarity confined to these and to the goatsuckers. As the parrots appear to form a group precisely equivalent to that of the true woodpeckers, we arrange them, with a uniformity of result, under five genera, namely, the macaws (*Platycercus* Vieil.), the parrots (*Psittacus* L.), the cockatoos (*Plyctolophus* Vieil.), the lorries (*Lorius* Bris.), and the ground lorries (*Platycercus*, Vig.). Under each of these, as among the woodpeckers, are several strongly marked subgenera, or types of form; but we are reluctantly compelled to take no further notice of them, in this work, than what will be found in the systematic arrangement.

(154.) The fourth family is represented by the Toucans, whose enormous bills give to these birds a most singular and uncouth appearance: their feet are formed, like those of the parrots, more for grasping than for climbing;—the latter faculty they do not, indeed, appear to possess; but as they always live among trees, and proceed by hopping from branch to branch, their grasping feet are peculiarly adapted for such habits. Toucans are mostly large sized birds, distributed over the New World, slender and graceful in their movements, and ornamented by rich and glossy colours. The apparent disproportion of the bill is one of the innumerable instances of that beautiful adaptation of structure to use, which the book of nature every where reveals. The food of these birds principally consists of the eggs and young of others; to discover which, nature has given them the most exquisite powers of smell: these organs could not be developed under the ordinary form; the bill, therefore, is made so

large as to contain an infinity of nerves, disposed like net-work, all of which lead immediately to the nostrils, and are protected externally by a thin horny covering; so that the bill, apparently so heavy, is in reality uncommonly light, and is no inconvenience to the bird whatever. The interval between the toucans and the parrots is not, perhaps, so great as between the latter and the wood-peckers; still it is sufficiently wide to make us believe that one, if not two, of the intervening types are wanting. The genera we restrict to four; *Ramphastos*, *Pteroglossus*, and *Aulacorynchus*, being found in South America, while *Sythrops* is their representative in Australia.

(155.) The fifth and last family is composed of the Cuckows,—a numerous and diversified race, which is spread over all the temperate regions of the globe. Their principal distinction rests on the very short and slender make of their feet; formed, indeed, much on the same model as those of the toucans, yet with one of the back toes so versatile that it can be occasionally brought forward,—a structure which we have already illustrated\*; while the habits of our European cuckow, which is a typical example of the whole, are known to almost every one. The majority of the true cuckows build no nests: they fly rapidly, and have the nostrils perfectly round: others, of the American genus *Coccyzus*, have short wings, and live almost entirely on small insects gleaned from the slender branches of lofty trees. The diversity of form observed in this family, renders it highly probable that all the genera of the two typical divisions are known, although the others have not yet been sufficiently studied. The following observations are, therefore, intended merely to show the apparent connection of this with the other scansorial families.

(156.) The passage from the toucans to the euckows, seems to be marked by such genera as *Phænicophæus* or *Saurothera*, where the bill, as in the first, is either much larger and thicker than in the generality of cuckows, and is thus assimilated in shape to that of the toucan, or, as in *Saurothera*, where the edges become dentated. *Crotophaga*

\* Vol. I. p. 82.

appears to come between these and *Coccyzus*; while the latter are closely connected with the true cuckows by the two North American species forming our subgenus *Erythrophrys*.\* The ground cuckows (*Centropus*) do not materially differ from the above, except by the remarkable length of their hind claw, which is similar to that of a lark. The nearest approach we yet know of to the creepers, is made by the African honeyguides, whose bill is not unlike *Orthonyx*; and these birds are said to climb in a more perpendicular manner than any others of this family: the affinity, indeed, of *Indicator* to *Buphaga* has already been pointed out †, and it seems to us too strong to be questioned; an inspection of their bills alone (*fig. 157.*) will sufficiently indicate their affinity.

(157.) The union of the scansorial tribe with the rasorial order of birds may now claim our attention; because, as the *Cuculidæ* are the most aberrant family of the first, it consequently follows, that among the most aberrant forms of this family we must look for the nearest approach to the rasorial structure. Rasorial birds have many peculiar characters: their size is generally very large; their bill compressed; their feet strong; and their wings short, convex, and rounded. Now, there are two or three very large cuckows, possessing all these characters; yet, from having the toes arranged in pairs, would seem to enter within the confines of this family, although at its utmost limits. The *Coccyzus Geoffroyi* of Temminck (*Pl. Col. 7.*), as well as the *C. Delalandi* of the same work (*Pl. Col. f. 440.*), are clearly of this description, and nothing would induce us to place them among the cuckows but the particular disposition of their toes. Not, however, having the immediate opportunity of examining these two rare birds, (the only specimens which we have seen are in Paris,) we shall bring forward another discovered in Mexico by Mr. Bullock, and which is now, or lately was, in the possession of the Zoological Society. ‡ This bird, which we consider

\* Magazine of Botany and Zool. i.

† Vol. I. p. 144.

‡ The reason I have heard against throwing open the museum of the Zoological Society to the free use of naturalists, is, that rules and regu-



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as the grallatorial type of the *Cuculidæ*, forms our genus *Leptostoma*; and it is highly probable, although their bills are shorter, that the two species above quoted will likewise belong to the same group. The head and feet, here represented of the natural size (*fig. 172.*), are completely those of a rasorial bird excepting the toes, which indicate that link by which it is united to the cuckows. A more perfect union, indeed, of the two circles of the *Scansores* and the *Rasores* could scarcely be imagined; for, were the toes *not* placed in pairs, *Leptostoma* would, to all intents and purposes, be a rasorial genus. The wings are uncommonly short; and its legs, for a cuckow, very long: it thus preserves its analogy to *Centropus*, which is also a grallatorial type.

(158.) The union of the three great tribes of

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lations, special permissions, &c. are necessary to "prevent coalition," or rather clashing, among naturalists, artists, &c. The fallacy of this reasoning is best shown in the case before us. Long before the bird in question came into the possession of the Zoological Society, I carefully examined, and named it in the catalogue of the Mexican Museum: the results, however, I have never, until now, published; and yet this very specimen has remained in the Society's museum *near ten years*, without any published account of it (as far as I can learn) appearing, although it is certainly the

perching birds into a circle of their own, has already been intimated. Every writer, since the days of Linnæus (who at first actually classed them in the same genus), has placed the motmots (*Prionites*) and the toucans (*Ramphastos*) close together, not only from the similarity of their habits, but from the structure of the tongue, which in both is long, and so much ciliated at its sides as to resemble a feather; so far, therefore, the resemblance is unquestionable. But the feet of the motmot are totally different from the toucan; they are not scansorial, but of that particular structure so common among the *Fissirostres*. The toucans we know, from personal observation, to be gregarious, living in flocks, and seeking their food from the tops of lofty trees; the motmot is solitary, hiding in the deep shades of the forests, and, like other air-feeding birds, is always found sitting nearly motionless. Here, then, is a very obvious departure from the structure and habits of the toucan. The question, then, is, to what does it lead? If to the hornbills (which has been inferred from the structure of the feet), we should have no diminution in the size of the bill; which, in both the hornbills and toucans is equally large, but in the motmot of an ordinary and proportionate size: we should further expect a bird which was gregarious, since both these groups are so. Yet there is nothing in the motmot, beyond its feet, which will at all assimilate it to the perchers; while its fissirostral habit of catching its food upon the wing, and the discovery of the broad-billed species, *Prionites platyrhynchus*\*, seem to us a conclusive argument for placing this genus in the fissirostral order, as more intimately related to the jacamars (*Galbula*) than to any other known genus.

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most extraordinary type yet discovered in this family. So far from any "coalition" being apprehended, it thus appears that the Society might well be grateful to those who will take the trouble of making known their unexamined stores. Although I have the drawing of the details of this bird before me, I have lost its description, so that this latter can only be supplied by an authorised member of the Zoological Society. Can this be the *Saurothera Californica* of Lesson, *Traité d'Orn.* p. 146.? or are there two or more species?

\* Linn. Tr. vi. 92.

## CHAP. X.

## ON THE TRIBE OF TENUIROSTRES, OR SUCTORIAL BIRDS.

(159.) THE most aberrant division of the insectorial order is that of the TENUIROSTRES, or honeysuckers ; so called from the great majority deriving their subsistence both from insects and the nectar of plants, which they suck up by means of a long or filamentous tongue, particularly adapted for that purpose. As these birds are furthest removed from the types of their order, they consequently show a greater affinity to the *Scansores* on one hand, and to the *Fissirostres* on the other, than to the more perfect groups of the perchers, as seen in the *Dentirostres* and the *Conirostres* : like the scansorial creepers, the bill is slender, and the feet very short ; but there the comparison ceases. The scansorial birds derive their food entirely from insects ; and, in general, have a simple and pointed tongue : but those we are now to consider, are chiefly supported by vegetable juices, extracted by means of a very long tongue, always retractile, and either simply forked, or divided into so many slender filaments as to resemble a painter's brush ; the bill, moreover, is so soft or delicate, that it is often incapable of grasping food, and appears, in the typical groups, principally intended to protect the tongue, as the chief member by which life is supported.

(160.) The families of this tribe will be briefly noticed under three heads : — First, the humming birds (*Trochilidæ*), which possess all the above characters in the greatest perfection ; secondly, the sunbirds (*Cinnyridæ*), where the feet are more lengthened ; and, thirdly, such families as either have the tongue short, the feet very strong, or the bill notched : these three divisions, which form the aberrant group, are the hoopoe birds (*Promeropidæ*), the Paradise birds (*Paradisidæ*), and the honeysuckers (*Meliphagidæ*).

(161.) The hoopoes (PROMEROPIDÆ) betray so close a resemblance to the bee-eaters, that there can be no reasonable doubt of their absolute affinity. The species are few in number, and are all restricted to the Old World : one alone, the common hoopoe (*Upupa Epops* L.), annually visits Europe, in company with the bee-eaters, rollers, and other swallow-like birds ; but, unlike its congeners, it seeks its food upon the ground. The bill in this family is equally long with that of the bee-eaters, — frequently, indeed, much longer ; like them, also, the tongue and the feet are very short, and the toes, in both, are syndactyle. The plumage of the hoopoes is generally glossed with a metallic blue and deep green ; and, in one species, the side and tail feathers are developed in the most singular and extraordinary manner : this is the grand *Promerops* of New Guinea, — a bird of such excessive rarity, that only two perfect specimens are known to exist in Europe. It inhabits the same regions as the Paradise birds ; and, from analogy, it may be thought to unite that beautiful family with the hoopoes. The only skins of these sumptuous birds which reach Europe, are generally deprived of the legs by the savages who prepare them for sale ; and, until the structure of the feet is better known, it will be impossible to determine the precise station which this bird occupies.

(162.) The station we have assigned to the PARADISIDÆ, or Paradise birds, has been before intimated.\* They are among the largest of the *Tenuirostres* ; and seem to live, like all their representatives, on soft substances, and these appear to be chiefly fruits. The best known are those species so commonly used as ornaments for the head ; and in these the bill is rather strong, and somewhat conic : but when we turn to others, and observe the long and nearly falcate bills of the twelve-wired Paradise bird — of M. Cuvier's *Epimachus* — of our genus *Ptiloris*, and then compare the slender bills of *Paradisea magnifica*, *sexsetacea*,

\* Northern Zoology, ii.

and *regia*, with those of the neighbouring group of honey suckers (*Meliphagæ*), the resemblance is sufficiently strong to believe it is one of affinity. On the other hand, it must be remembered that the genus *Paradisea* of Linnæan ornithologists, and of most subsequent writers, is an artificial group, formed of those birds whose plumage is the most extraordinary or magnificent, without sufficient regard to other parts of their structure. Thus, the *Paradisea aurea* was most judiciously considered by Linnæus a true oriole, while the *Paradisea gularis* proves to belong to the starlings (*Sturnidæ*). The difficulties attending a knowledge of these superb creations are, indeed, very great. Restricted to a few small and remote islands of the Indian Ocean, whose inhabitants are almost cannibals, these splendid skins only reach us through the Chinese traders, mutilated, and dried upon sticks. All writers, it is true, have placed the Paradise birds in the same order with the crows: but this argument, taken by itself, is of little value; since there is an evident connection between the hoopoes and the Paradise birds, and again with these latter and the rifle-bird of New Holland (*Ptiloris paradiseus*, Sw.): the whole aspect, indeed, of this latter genus is that of a long-billed Paradise bird; while its legs, which are very short, are of that peculiar structure which belongs to the family we shall now enter upon.

(163.) The *Meliphagidæ*, or honey suckers, are distinguished from all the preceding families by their notched bill; the tongue is also terminated by a bunch of delicate filaments; and the hind toe is so strong and robust, that it serves as a powerful support to the bird during the process of feeding: on this particular structure we have already offered more detailed observations.\* It is sufficient here to mention, that, from this kind of tongue having been confounded with the ciliated form seen in the orioles and other birds, several errors have arisen. Some of the natural groups,

\* Zool. Journ. vol. i. p. 450.



however, have been pointed out by Messrs. Horsfield and Vigors\*, but, from a deficiency of analysis, their combinations do not appear to be natural: the attempt, however, deserves much praise; for it is advisable, at all times, to point out prominent distinctions in the first instance, before we venture on tracing the *filum ariadnæum* of nature. As our own views of the natural arrangement of the *Meliphagidæ* will be seen in another part of the volume, we shall here only take a rapid view of such groups as we include in this family. The typical genera are small or middle sized birds; but some of those which are aberrant grow much larger. In the genus *Philedon* Cuv., the head is nearly bare of feathers, and the neck is surrounded with a ruff somewhat similar to that of the vultures; their size is nearly equal to that of the jay; the claws are strong and acute; and, as these birds are said to chase others of a small size, one would almost imagine they represented the rapacious order. In what appears to be the rasorial form of the typical genus, we have the wattles of a gallinaceous bird; while the *Etourneaux verdâtre* of the Paris Museum seems to be a true honey-sucker, disguised as a starling. These and many other most curious analogies are only so many indications that the *Meliphagidæ* contain types of every order and tribe throughout ornithology; while the existence of such a singular form as *Ptiloris paradiseus*, already adverted to, leads to the suspicion that the family may be truly connected with the hoopoes, so as to unite the aberrant divisions of the whole tribe into one circular group. Having now slightly touched upon the three aberrant families of the *Tenuirostres*, we may proceed to those more typical, in which the characteristic distinctions are fully developed.

(164.) The subtypical family is composed of the *Cinnyridæ*, or sunbirds, so called by the natives of Asia in allusion to their splendid and shining plumage: between this family and the last the affinity is obvious;

\* Linn. Trans. xv. 311.

but whether the direct passage is made by the short-billed honey suckers (*Diceum* Cuv.), or by the spider-suckers (*Arachnothera* Tem.), is uncertain. The plumage of the meliphagous birds of New Holland is almost universally dull, or at least destitute of those gay and beautiful tints which are so strikingly developed in the sunbirds: a rich golden green, varied on the under parts with steel-blue, purple, bright orange, or vivid crimson, decorates nearly all the species, and produces a brilliancy of colours only rivalled by those of the humming-birds. The bill is very long, slender, and acutely pointed, the margins being dentated in the most regular and delicate manner; yet these teeth are so small as scarcely to be seen by the naked eye: the tongue is formed into a bifid tube, or rather, as we suspect, into two flattened filaments; thus differing materially from that of the honey suckers, which always ends in a brush: the bill also is never notched. The difference between the two structures is softened down by the intervention of the nectar-birds (*Nectarinia* Ill.), whose bill shows a union of both characters,—the margins being finely dentated, and the tip distinctly notched. The species of the latter are few; and while *Cinnyris* is restricted to the tropics of the Old World, *Nectarinia* represents them in the New. Some few other forms, found in Australia and in the Oceanic Islands, belong to this group, and they are arranged in the genera *Melithreptes* and *Diceum*, but their habits are imperfectly understood.

(165.) In the TROCHILIDÆ, or humming-birds, we have the full developement of the suctorial perfection belonging to this tribe. The bill, from its soft and delicate structure, appears adapted for no other purpose than to protect a long bifid and flattened tongue\*, darted by these little creatures into the nectary of flowers, for the purpose of licking the honey: but, like the rest of this tribe, the humming-birds are partly insectivorous; a

\* The tongue of the humming-birds has always been described as *tubular*; but in all that I have examined, the two filaments are perfectly flat.

fact we have personally ascertained, having repeatedly discovered minute flies in the stomachs of those we dissected. In speaking of these charming birds, the naturalist is almost tempted to abandon that didactic style best suited to his subject, and to clothe his information in the language of poetry ; yet both must fail in conveying to the mind an adequate idea of their surpassing beauty. The rainbow colours of the most resplendent gems are here superadded to a living form, which in itself is exquisitely graceful and animated in all its movements : the flight of these pigmy birds is so rapid as to elude the eye ; for a few moments they may be seen hovering over a flower, but so soon as they have sipped its sweetness they vanish in an instant ; they may, in truth, be said to “ come like shadows, so depart.”

(166.) Between the humming-birds and the last genus there is obviously a strong affinity, although we are unacquainted with the precise link which connects the two. The old authors not unfrequently confounded the two races ; but they are too distinct to be mistaken even by a modern student. The *Cinnyridæ* have full-sized legs, and their wings moderate and rounded : the humming-birds, on the contrary, have the feet excessively short and remarkably small ; while the wings, for the size of their body, are frequently longer than those of the swallows. As the sunbirds are restricted to the tropical latitudes of Africa and India, so are the humming-birds confined to America ; both groups are rich in species ; and of this, in particular, the variety of secondary forms is almost innumerable. We have endeavoured to determine the five principal genera, but the subgenera can only be correctly ascertained by a much more rigid analysis than we have yet been able to make. In the genus *Trochilus*, as now restricted, we have all those whose bills are perfectly straight, the tail being either even or slightly divaricated. *Cynanthus* comprehends such species as have the bill slightly bent, with a tail very long, and deeply forked. If we look to the sunbirds on the one hand, and to the hoopoes on

the other, we immediately perceive that the straightness of the bill is a typical perfection of the humming-birds. In the genus *Lampornis* the bill is obviously much depressed at the base, and the tail is broad and even; while the type of the genus *Campylopterus* seems to be the recurved-billed humming-birds. Last of all comes the genus *Phaethornis*: hitherto the form of the tail has either been square, forked, or rounded; but in this group the tail is considerably and regularly graduated, the side feathers very short, and the middle pair far exceeding all the others; the bill is not merely bent, but so much curved in the typical species as nearly to assume the form of a sickle. The gay and beautiful green which ornaments the upper plumage of all the groups here gives place to a brown colour, and even the throats of the male birds are destitute of ornament. The genus *Phaethornis*, in fact, obviously represents the rasorial type, and is a miniature likeness of the hoopoes, or to that family with which we began our survey of the *Tenuirostres*.

(167.) Although the circle of this tribe is by no means so complete as some others, it must still be remembered that nothing yet known tends to invalidate the succession of the forms here traced. On looking to the hoopoes, and more particularly to the genus *Epimachus* of M. Cuvier, we see an evident tendency in nature towards some extraordinary development of plumage, quite different from the usual arrangement; nor in no one family is this more apparent than among the *Paradisiadæ*. On looking again to the genus *Ptiloris*, we have such a close resemblance both to the *Epimachus* and to the Paradise birds, that some writers have actually placed it as species of *Epimachus*; and such it would unquestionably be, but for its possessing the feet of the *Meliphagidæ*. It is quite immaterial to this view of the subject, whether a whole or a part of the Paradise birds enter between the *Promeropidæ* and the *Meliphagidæ*: it is sufficient to show the strong probability of the interval being filled up by some birds of a similar construction,—that is,

partaking both of the structure of the hoopoes and of the honey suckers ; and both Cuvier, Lesson, Jardine, Selby, and James Wilson concur in believing that our *Ptiloris paradiseus* exhibits such a union : into which of these families, therefore, *Ptiloris* naturally enters, is a secondary question, which need not here be discussed. Theoretically we might make use of this form, either to pass from the Paradise birds to the *Meliphagidæ*, or to connect the latter with the *Promeropidæ*, and thereby represent the aberrant circle as closed. The views, indeed, of the ornithologists above named, are all in favour of the latter supposition, seeing that they have not, in every instance, separated *Ptiloris* from *Epimachus* ; the latter being universally considered as a hoopoe. Such appears, to us, an impartial statement of the difficulties which at present impede our knowledge of these three groups.

(168.) Between the honey suckers and the sunbirds the affinity is unquestionable ; and no one can doubt that the latter are followed by the humming-birds. The similarity between these latter and some of the small hoopoes is sufficiently strong to point out an affinity not very distant between them, so that there is every reason to believe the *Tenuirostres* are naturally disposed in one great circle. The *Trochilidæ*, nevertheless, are one of those strongly marked groups in nature, which, if the term can be correctly applied, are, in one respect, isolated. The species are very numerous, and exhibit among themselves a great variation in the structure of particular members ; yet, when viewed *as a whole*, they are stamped with such a peculiar character as to be recognised at the first glance. In other groups, ornithologists are perpetually referring species to families which they closely resemble, but to which they have no real affinity : yet no one can mistake a humming-bird, a hornbill, a toucan, a parrot, or a falcon ; nor is there hardly any species in these groups partaking so little of their respective typical characters, as to excite a doubt to which it truly belonged. Now, in applying these remarks to

the humming-birds, we have already shown that they form among themselves a circular group; it consequently follows that the genera by which they are connected with the hoopoes must, if in existence, belong to the *Promeropidæ*,—a family wherein the species and forms are few, and where there is a sufficient interval to admit of two or three intermediate genera, the discovery of which would at once fill up the hiatus between *Promerops* and *Phæthornis*. Having already offered several remarks on the relations of this tribe\*, when compared to other ornithological circles, we may now at once pass on to the last of the principal groups in the order.

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## CHAP. XI.

### ON THE TRIBE OF FISSIROSTRES, OR SWALLOW-LIKE BIRDS.

(169.) THE order of FISSIROSTRES is best represented by the swallows and goatsuckers: the former are the most isolated; while the latter, above all other birds, show the nearest affinity to the owls. No species, indeed, has yet been discovered, which would perplex a naturalist to decide to which of these families it belonged: but that is not material: we do not uphold the injudicious theory that every one of nature's links are so perfect, or rather, are so well known, as to leave no unequal intervals in the series; on the contrary, we maintain that such interruptions are frequently found, and, in this manner, are the goatsuckers detached by a slight interval from the owls.

(170.) The fissirostral birds, as a whole, are peculiarly distinguished, by having the powers of flight developed in the highest degree: all the energies of their nature seem concentrated in this one perfection;

\* North. Zool.

for their feet are always very short, weak, and generally so imperfect as to be of no farther use than to rest the body after flight: their food is exclusively insects, captured upon the wing. To accomplish this, nature has given to their mouth an enormous width, by which, superadded to their amazing flight, and rapidity of movement, they are almost sure to capture their prey. Who, that has watched the swallow or the goatsucker, has failed to recognise these peculiar perfections? As the nocturnal goatsuckers frequently prey upon beetles and large moths, the mouth, in such species, is defended by stiff bristles: but these appendages are rendered unnecessary to the swallows; *their* game consisting entirely of those little soft insects seen in the air on a summer's evening, or sporting on the flowers of a sunny field. The goatsuckers choose the twilight, and catch their food precisely in the same way, excepting, indeed, that their little short feet are sometimes used for the same purpose, — a most singular part of their economy, first noticed by our countryman, White. Some of these nocturnal birds (*Pogardus* Cuv.) have a bill nearly as strong as an owl; others are furnished with forked tails of excessive length; and one species, discovered during our researches in Brazil (*Caprimulgus diurnus* Tem.), quits the nocturnal habits of its congeners, and in cloudy days may be seen in troops of fifteen or twenty, skimming over the surface of ponds, precisely in the manner of swallows: these two groups, in fact, are connected by certain swifts; for the Balassian swift\* is described as “a nocturnal bird, appearing at sunset, and going to rest at sunrise.”

(171.) We thus enter the family of swallows (*Hirundinidæ*), which present many singular variations of structure among themselves: in the true swifts (*Cypselus*), the hind toe is so placed that it can be brought nearly forward, and all four are armed with very strong crooked claws, giving to the bird such a firm grasp, that it can sustain itself by the side of

\* Gen. Hist. of Birds, vii. p. 329.

perpendicular rocks or buildings with the greatest facility: others (*Chætura* Stev.), with less robust feet, are compensated for the deficiency by being furnished with a very stiff and pointed tail, which serves as an additional support, when resting in such situations. In the long-winged swifts of India (*Macropteryx* Swains.), all these characters are modified, and we see the swifts changed almost into the swallows. The two typical groups of the *Fissirostres* are thus united, and both may be characterised by a very short bill. The third group, as usual, contains three others, all exhibiting, more or less, a similar economy, but having the bill considerably more lengthened.

(172.) The *Meropidæ*, or bee-eaters, succeed the swallows. This family is confined to the warm regions of the Old World: one species, however, the *Merops apiaster*, or European bee-eater, has occasionally strayed to Britain. These birds annually visit Italy in flocks of twenty or thirty, and may be seen skimming over the vineyards and olive plantations with a flight much resembling the swallow, though more direct and less rapid: their bill, however, is considerably longer and more gracile; but this difference is softened down by the intervention of the genus *Eurystomus*, containing the swallow rollers of India, Africa, and Australia, where this member is very short. To these succeed the true rollers (*Coracias* Lin.), which arrive in Italy at the same time with the bee-eaters, and associate also in small flocks. These two genera of rollers are so indissolubly united, that nothing but the strongest prejudice in favour of a preconceived theory could ever have induced certain naturalists (whose labours, in other respects, have been of much advantage to science) to have placed them in two different orders. The whole structure of the rollers, their lengthened pointed wings, and their firm and often forked tail, at once induces the idea that they feed upon the wing; while their very short legs, scarcely longer than their hind toe, might have shown their incapacity to alight and walk, like the crows, upon the ground:



but this question is at once decided by a knowledge of their economy, which, from personal observation, we have every reason to believe is much like that of the bee-eaters. The intervention of the rollers at once lessens the abrupt transition, which would otherwise be apparent, from the perfect-footed swallows to the zygodactyle bee-eaters; and we are thus prepared for all those birds, whose toes, as it were, are soldered together like those of the *Meropidæ*. Here, perhaps, we may notice that most beautiful and rare genus, *Nyctiornis*, or night-feeder\*, as being, in all probability, that particular link by which nature connects this family with the trogons,—thereby uniting the three aberrant groups of the *Fissirostres* into one primary circle. M. Temminck, overlooking its peculiar structure, placed this genus with *Merops*, to which, indeed, it has a close resemblance; while its connection to *Prionites* (Ill.) in other parts of its organisation is no less obvious. Its precise situation, in short, requires further investigation.

(173.) The family of *Halcyonidæ*, or kingfishers, is obviously connected to the last. It comprises several well marked genera, agreeing among themselves in the great length of their bill, and in the extreme shortness of their feet. These characters, it is true, belong also to the true bee-eater; but here a remarkable difference in economy is first developed. We have seen that the goatsuckers, swallows, and bee-eaters traverse the air to search after and pursue their prey; their wings are, consequently, adapted for long and continued flight: but the family now before us have a different economy, and therefore a different organisation. The whole of the genera are sedentary, *watching* for their food from a fixed station, which they only quit as soon as their prey approaches sufficiently near to come within the sweep of their wings: if unsuccessful in their first attack, they do not pursue their game, but return again to their post, and patiently wait for another luckless straggler; if their first attack is successful, they return with their victim

\* Zool. Illust. ii, pl. 56.

to the same station, and then proceed to swallow it. Every one knows that these are the habits of the European kingfisher (*Alcedo ispida*) and travellers affirm that the kinghunters (*Halcyon*) pursue the same method in the forests of the Old World. But it has unfortunately happened that systematic naturalists, totally unacquainted with the natural habits of the other genera (nearly all of which are confined to Tropical America), have fancied they were *climbing* birds, and have consequently placed them in other orders, whose organisation and economy are widely different. Thus the jacamars, in the *Règne Animal*, are placed after the hornbills, and the puff-birds (*Tamatia*) are associated with the cuckows. These unnatural combinations are the inevitable result of laying down those arbitrary rules of classification which are not founded on natural economy.

(174.) The manners of the puff-birds, forming the genus *Tamatia*, have been already described.\* They sit for hours together on a dead or withered branch, from which they dart upon such insects as come sufficiently near. The hermit birds (*Monassa Vieil.*) do the same, and frequently rise up perpendicularly in the air, make a swoop, and return again to their former station. Similar manners also, belong to the jacamars, although their flight is weaker. They generally sit on low, naked branches in the forest paths, from whence they dart upon butterflies, spearing them with their long bill: their haunts, indeed, may frequently be known by the ground being strewed with the beautiful wings of their victims, the body of which they alone devour. Now, in all the groups of this family here noticed, the bill is invariably compressed on its sides, and generally of considerable length; but in the *Galbula grandis* we first discover a change from this structure, and we see a bill considerably broad and depressed,—that character, in short, which is in unison with the next family.

(175.) The *Trogonidæ*, or trogons, in one sense, are such an isolated group, that naturalists have been much

\* Zool. Illust. i. pl. 99.

perplexed in what natural family to arrange them. M. Cuvier, in placing them near to the puff-birds (*Tamatia*), seems to have had some perception of what we believe to be their true station in nature, although both these groups find a place among his climbing birds (*Grimpeurs*). M. Temminck adopts the same views. Mr. Vigors, in his "Natural Arrangement," first placed the genus *Trogon* between that of *Crotophaga* and *Corythaix*, with a mark of doubt, but subsequently he located the trogons near the parrots. The trogons are abundant in South America; and are, perhaps, one of the most extraordinary genera found in that continent. They are not climbing birds, nor are they in the least organised for that purpose: they live in the deepest and most gloomy shades during day, where they sit, almost motionless, on a dead branch: during the morning and evening they are more active; at these times they go into the open parts of the forest, and, taking a shady station, dart upon winged insects, particularly hard-coated beetles; at other times they feed upon fruits, especially on the rich purple berries of the different *Melastomæ*, at which they invariably dart, precisely the same as if they were insects capable of getting away! The singular account of these birds given by our hunters first awakened our attention to them in their native regions, and these results have since been fully confirmed by the observations made on those species peculiar to Demerara by Mr. Waterton, a well known and observing field naturalist. Finally, the trogons, like the goatsuckers, have remarkably thin skins; like them, they feed upon the wing; the feet of both are so short and feeble, as scarcely to be of any other use than to rest the the body; the bill in both is remarkably short; the plumage in both is soft and loose; both have the mouth defended by strong bristles; and both are most active during twilight. Here, then, is the point, if not of absolute junction, at least of the strongest affinity yet discovered, between the *Caprimulgidæ* and the *Trogonidæ*; and it is thus, as we conceive, that the circle of the *Fissirostres* is formed. We began with the goat-

suckers ; and, after tracing their connection with the swallows, the swallows with the bee-eaters, and the bee-eaters with the kingfishers, we finally return to the point whence we started.

(176.) The other genera associated with the trogons deserve attention : we have already mentioned the peculiar broad bill of the great jacamar. Between this bird and the trogons are placed the different species of motmots (*Prionites* Ill.) ; one of which has the bill greatly depressed, and all, like the genuine trogons, have the margins toothed or serrated. Placed, therefore, at the extremity of this family, the motmots appear to connect the trogons with the jacamars, while at the same time they effect that important union with the scansorial birds which we have already mentioned.

(177.) The analogies between the foregoing families and the principal divisions or tribes of the perching birds have already been mentioned. It nevertheless becomes a question, whether the *Caprimulgidæ* should not be considered as typical of the *Fissirostres*, rather than that station should be assigned to the *Hirundinidæ*, upon the same principle as that which makes the *Picidæ*, and not the *Psittacidæ*, the chief type of the *Scansores*. The *Caprimulgidæ* and the *Picidæ* are each pre-eminent in that particular organisation which belongs to their own circles, just as the *Hirundinidæ* and the *Psittacidæ* have the greatest general perfection of structure in all other respects. If, then, the analogies are to be thus founded, the families of the *Fissirostres*, and the tribes of the *Insessores*, will each follow in their true chain of affinities, without that transportation seen in the table, Vol. I. p. 360.—thus :

<i>Conirostres.</i>	} The two typical groups.	{ <i>Caprimulgidæ.</i>
<i>Dentirostres.</i>		
<i>Fissirostres.</i>	Pursue their prey on the wing.	<i>Meropidæ.</i>
<i>Tenuirostres.</i>	Bill very long, slender, entire.	<i>Halcyonidæ.</i>
<i>Scansores.</i> :	{ Wings short, convex ; bill short, arched ;	} <i>Trogonidæ.</i>
	{ tail broad, long.	

## CHAP. XII.

## ON THE RASORIAL ORDER, OR GALLINACEOUS BIRDS.

(178.) THE gallinaceous birds, or RASORES, may be generally characterised as large, heavy, and terrestrial ; and as being that order more especially set apart by their Great Creator for the service of man. Hence they are more easily domesticated than any other birds, their flesh is the most savory, and their fecundity the most productive. They exhibit in the highest perfection all those characters which we have elsewhere assigned to one of the primary types of nature, which among birds is called the *rasorial*, and among quadrupeds the *hoofed*. Strong thick legs, long necks, short wings, elegant crests, and large ample tails, characterise the majority of these birds ; and they are the only ones, as a group, which, like the ruminating quadrupeds, habitually eat the green leaves of vegetables. They live, indeed, almost entirely upon the ground, which consequently affords them their chief nourishment in the seeds and grains of different plants. The domesticated races of the fowl, the turkey, and the peacock are familiar to every one, and in themselves give us the typical habits of nearly the whole order. Here also we rank the pigeon tribe ; since, although it exhibits many peculiarities, more especially that of rapid flight, it is still in many other respects inseparably a part of this order. The *Rasores* are the largest birds in creation ; for among them are found the ostrich, the cassowary, and the emu : they are also the most gentle, and are endowed with the greatest aptitude for domestication ; since, above all others, they administer to the wants and the comforts of man. Their flesh and their eggs are universally wholesome and very nutritious ; while their feathers are employed,

both by the philosopher and the savage, in giving comfort and rest to the human frame. As connected with the gentleness and inoffensive habits of this tribe, we find a peculiar developement of the love for their offspring: and that the increase of the domesticated species should keep pace with the wants of man, we remark a fecundity much greater than in ordinary birds. The more scientific distinctions of the rasorial order, in comparison with that of the perchers, may be thus briefly stated:—Their external peculiarities are very striking: the feet are particularly robust, and the hind toe, being placed on a greater elevation than the fore toes, almost debars the foot from any power of grasping; the hind toe, indeed, is either frequently minute, or altogether wanting: the bill is short and strong, having a peculiar horny appearance; it is destitute also of a notch: the wings are muscular; but the quill feathers are short, unusually convex, and much rounded: many of the typical groups have the tarsi armed with spurs, as in the domestic cock; while such as show the typical characters in their full perfection, have the tail feathers of an extraordinary length, and magnificently coloured. Their internal organisation is equally peculiar: like ruminating quadrupeds, they have three stomachs; the sternum is marked by two deep lobes or notches, the anterior part of the crest of which is truncated, so that the sharp end of the furca is joined to the sternum by a mere ligament; this conformation, by weakening the pectoral muscles, at once accounts for their inferior powers of flight.

(179.) The habits and economy of rasorial birds are well exemplified in our domestic races. They are social, live in societies, and are polygamous. They prefer escaping from danger by running, and only take to flight when compelled by necessity. The females are generally the smallest, and always the least ornamented: they are fond of rolling in dust, to free themselves, as it is thought, from vermin: some nestle on the ground, and live only on plains; while others, of

the more aberrant divisions, as the guans and pigeons, reside in forests and nestle in trees.

(180.) The analogy of the rasorial birds to the ruminating quadrupeds has been so fully investigated in the preceding volumes of this series, that we shall now merely bring before the ornithologist the results of our analysis of the two groups. Independent of their general analogies, which they exhibit as a whole, it appears from the following table, that even the primary divisions of each possess separate analogies, readily understood by those who are acquainted with the two classes.

ANALOGIES of the RASORIAL BIRDS with the UNGULATED or HOOFED QUADRUPEDS.

Primary Circles.	Families of the Rasores.	Analogical Characters.	Families of the Ungulata.
Typical.	PAVONIDÆ.	Tail excessively long.	SOLIPEDES.
Subtypical.	TETRAONIDÆ.	Tail very short.	RUMINANTES.
Aberrant.	CRACIDÆ.	Semi-aquatic.	ANAPLOTHERES.
	COLUMBIDÆ.	{ Jaws prolonged, slender; feet very short. }	EDENTATES.
	STRUTHIONIDÆ.	{ Size large; hair or feathers very thin; skin thick; toes very few. }	PACHYDERMES.

(181.) The peacock, as the pre-eminent type of the rasorial structure, has the longest and most elegant tail of any bird in creation; and this is precisely the distinction of the horse among quadrupeds, of which it is the pre-eminent rasorial type. The most beautiful crests are found among the rasorial birds; while the hoofed quadrupeds are those only which have crests in the shape of horns. It is well known that the ruminating order is eminently herbivorous; and the *Rasores*, in a state of nature, are the only birds which eat grass. The types of both orders live entirely upon the ground, for only part of the *Rasores* roost upon low trees. Both are the most gregarious of their respective classes, not in one or two instances only, but with scarcely any exceptions. The *Ungulata* have the fewest toes of any quadrupeds; and this, in regard to birds, is a grand characteristic of the *Rasores*, where we have the family of ostriches actually

representing — as seen in the above table — the gigantic elephants, and the other *Pachydermes*. But let us look further into the secondary analogies expressed in this table. The *Solipedes*, or horses, and the *Pavonidæ*, or peacocks, are already disposed of; while, in the types of the *Ruminantes* (as the deer and antelopes), and of the partridges (*Tetraonidæ*), the shortness of the tail is one of their great peculiarities. The *Struthionidæ* or ostriches, still more beautifully represent the *Pachydermes* in their great bulk; while the obtuse horny protuberance of the cassowary is a most striking representation of the short horn of the rhinoceros. The pigeons (*Columbidæ*) in one order, and the *Edentates* in the other, follow next; let us, therefore, see how far these groups are analogous. The *Edentates*, or anteaters, are remarkable among the hoofed quadrupeds for having the greatest prolongation of muzzle, and in having the shortest feet: the muzzle of birds is their bill; and the bills of the *Columbidæ*, or pigeons, are the longest and the most slender, considering the size of the birds, of any among the *Rasores*; while their feet possess the opposite extreme of shortness: each, again, are the most aberrant in their respective circles. M. Cuvier is decidedly of opinion that the extinct *Anaplotheres*, like the modern tapirs, lived in the vicinity of water or in marshes, and that they thus became semi-aquatic. Such are the localities of the American *Cracidæ*, or curassow birds, as we know from personal observation; while their long and somewhat rigid tail preserves that affinity to the *Scansores* which has been already mentioned.

(182.) The precise manner in which this order is connected to that of the perchers, through the medium of the *Scansores*, has been variously stated. M. Cuvier considers that the *Musophagidæ*, or plantain-eaters, approximate on one hand to the *Scansores*, and on the other to the *Gallinacea*; and this opinion has been so strongly taken up by others, that not even a doubt has been expressed on the subject. We have, however, already traced the affinity between the plantain-eaters, the plantain-cutters, the finches, and



the hornbills. Nor are there wanting other reasons, equally strong, against this popular theory. When we call to mind that gregarious habits, and a constant partiality for the ground, are two of the most universal peculiarities of the *Rasores*, it appears very little likely that the plantain-eaters formed the connecting group between these two orders. The genera *Musophaga* and *Corythaiix* are described by those who have seen them in their native haunts, as solitary; and Le Vaillant expressly states, that the beautiful green touracco of the Cape (*C. persa*) perches only at the extremities of the highest branches of trees, beyond gunshot. Here, then, we trace not the most distant resemblance, in manner or economy, between two genera, which have been supposed to connect the climbing with the gallinaceous birds. Let us look, therefore, among the cuckows for some genera which show this affinity more closely. *Crotophaga*, for instance, resembles the *Rasores*: both have such a weak flight, that they seldom proceed far on the wing; both habitually live, and build their nests, upon the ground; and both associate in flocks. Among hundreds of the common *Ani*, which we have seen in South America, we never beheld one perch upon any thing higher than a bush; and this was but seldom, as they are habitually terrestrial birds, totally differing in economy and habits from the European or the American cuckows. Their scansorial feet is no serious objection to their affinity with the *Rasores*; for, if the authority of Linnæus is to be trusted, there is actually one which has three toes before and one behind. But if we wish a closer affinity, we may look to the genus *Leptostoma*, already mentioned (157.), where the long legs, short convex wings, entire bill, and large size of the body, remind us immediately of a rasorial bird: but this affinity seems carried even still further by the *Coccyzus Geoffroyi* Tem., — a bird represented\* with a long and robust foot, nearly twice the length of all the other known species,

\* Pl. Col. 7.

having the whole aspect of a *Crax* or a *Penelope*. We again allude to these approximations of the cuckows to the *Rasores*, to show that the former are much nearer to the latter than is *Musophaga*, whose affinity with the *Conirostres* seems to us, at least, indisputable.

(183.) The natural divisions of the *Rasores*, and their circular arrangements, have hitherto received but little attention, nor have we yet been able to analyse more than a few of their minor divisions; we shall, therefore, merely refer the systematic reader to the technical definitions of the genera, which we have arranged in what appear to be the natural families: these succeed each other in the following order:—  
1. The *Cracidæ*, or alectors; 2. The *Pavonidæ*, containing the peacocks and the fowls; 3. The *Tetraonidæ*, or partridges; 4. The *Struthionidæ*, or ostriches; 5. The *Columbidæ*, or pigeons.

(184.) The large American gallinaceous birds, forming the family of CRACIDÆ, are chiefly distinguished by all their toes being placed on the same plane or level, like those of the perching order\*: their legs, also, are destitute of such spurs as we see upon the feet of the common cock; and the *tarsus*, in proportion to the size of the bird, is short and slender: the hind toe is much developed; we accordingly find that these birds frequent and perch upon trees, nearly as much as upon the ground. In their plain colours, they offer a singular contrast to the brilliant plumage of the Asiatic races, which occur in nearly the same parallels of latitude in the Old World. It is singular that so little pains have hitherto been taken to domesticate these American fowls; since, by their sociability and gentleness, they evince every disposition to live under the dominion of man. The flesh, as we know from personal experiment, is particularly delicious.

(185.) The genera need only be briefly glanced at. The first we place upon the list is PENELOPE (Mer.) (*fig.* 173.), known by the more familiar name of guans. In

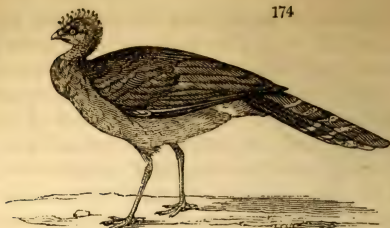
\* Vol. I. p. 154.

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the long graduated tail, compression of the bill, and length of the hind toe, we see an evident approximation to several of the cuckows. There are many species, mostly of a dull colour; yet some have white crests, and nearly all are bare of feathers round

the eyes and throat; the skin on the latter being capable, as it is said, of inflation. Their windpipes are singularly twisted. In *Ortallida*, the head is entirely plumed. Close to these birds, some systematists have placed the rare genus *Opisthocomus*, hitherto found only in the swamps of Guiana. M. Sonnini informs us, that it feeds on the berries of the *Arum arborescens*; which, being a large tree, corroborates the singular fact he states, that these birds seldom go on the ground, but remain tranquilly perched upon those branches which hand over the water, the greatest portion of the day. It deserves, also, particular attention, that the toes, unlike those of all other gallinaceous birds, are totally destitute of a basal membrane. We have never been fortunate enough to see a living specimen of this rare bird, — the only one of its genus, — and can, therefore, offer no opinion on the degree of affinity it bears to the scansorial tribe; or, according to M. Temminck, to the crows! The circumstances in its history lead us to suspect the former affinity must be the true one. Is the outer toe in any degree obliquely inserted? The most beautiful examples of this family are seen in the crown or curasow birds (*Crax* L., fig. 174.). Their heads are adorned with short elevated crests of curled feathers, which assume the appearance of ending in little globules, giving a majestic appearance to the bird, whose gait is slow and majestic. Formerly, as M. Temminck records, these birds were very common in the menageries of Holland, where they became equally tame as the



fowl, the turkey and the peacock ; yet the greatest care and attention were necessary to induce them to breed and rear their young. It seems, however, that this was done so completely by M. Arneshoff, that several species in his menagerie were as prolific as common fowls, and even gave an abundant supply for his table. In Brazil, and, indeed, in all parts of their native country, their domestication is totally disregarded. Close to these we may place the genus *Ourax* Cuv., or cushews, chiefly distinguished by a shorter and much thicker bill,—a peculiarity which leads us to suspect this group represents that of the hornbills (*Buceros* L.): three or four species, all natives of the Brazilian forests, have been described by modern writers. There are



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two other genera which have recently been placed in this family \*, with which they certainly accord more than with any other group of the *Gallinacea* : these are *Menura* and *Megapodius* (fig. 175.); the first represented by the magnificent lyre-tail of New Holland, the latter by two species from the adjacent islands : both have the feet uncommonly large, and both seem to represent the scansorial genus *Orthonyx*, — a bird, indeed,

scarcely larger than a sparrow, but agreeing in the very

\* Linn. Tr. xiv. p. 486.

remarkable scansorial character of having the three fore toes of nearly the same size. If the *Cracidæ*, as we believe, is the scansorial family of the *Rasores*, this singular analogy is precisely what we should expect in two groups representing the same tribes. The habits of the two last-named genera have never been made known. Our learned friend, chief justice Field of Gibraltar, long a resident in New Holland, assures us that *Menura*, in all its habits, is a gallinaceous bird; living on the ground in small societies, and very fond of rolling in the dust.

(186.) The PAVONIDÆ, containing the peacock and pheasant, as M. Cuvier well remarks, follow the great *Gallinacea* of America, noticed in the last family. In this group have been assembled also the different species of cocks, scattered so profusely over the hotter latitudes of Asia. We now have the typical characters of the whole order displayed in the conspicuous shortness of the hind toe, the formidable spurs on the legs, and the most beautiful developement of the tail. The whole of the genera belonging to this division, with the exception of the turkey, are natives of the warm latitudes of the Old World.

(187.) Among the genera, we shall first notice that of *Meleagris*, comprising the domestic turkey, and another, still more beautiful, inhabiting the forests of Honduras. This latter (the *Meleagris ocellata* Cuv.) has the tail feathers ornamented with eyelike spots, something in the manner of the Oriental peacocks, which it seems to represent in the New World. On the magnificence of our domestic peacock, standing at the head of the genus *Pavo*, we need not dwell; we can conceive nothing more grand, at least, to the eye of an ornithologist, than to contemplate, unobserved, a flock of these gorgeous birds in their native forests: they appear to be common in most parts of Hindostan, and are considered by the English hunters as birds of *game*. China and Japan produce other species, scarcely less brilliant, but very little known in Europe. The Argus peacock or pheasant forms the genus *Polyplectron*,

(Tem.). It is strikingly distinguished from the last, by the peculiar form of its tail, and by having several spurs to the feet. Destitute of the vivid and shining colours of the true peacocks, this bird is perhaps equally beautiful, being covered almost entirely with dark rings or eyelike spots upon a cinnamon coloured ground. Of the genus *Argus* Tem., little is known beyond its being a very shy and delicately constructed bird. In that of *Gallus* is comprised the different species and varieties of our domestic fowl; since it is now generally admitted that these have originated from races perfectly distinct. M. Temminck, who has investigated this subject with great ability, conceives that our common poultry have descended from the *Gallus giganteus* and the *Gallus Bankiva*: the first a very large species, inhabiting Sumatra; the other much smaller and common in Java. The genus *Lophophorus*, likewise Indian, comprehends the famous Impeyan pheasant of Latham, whose plumage can only be compared to the most refulgent hues of variously coloured polished metals. We are next led to the beautiful group of pheasants; one of which, — the common species of our preserves, — is well known: like all its congeners, its native country is towards Asia; and, however beautiful, it can scarcely be compared with several others, natives of China, Japan, and the elevated mountains of Thibet. Africa furnishes us with only one genus in the Guinea-fowl (*Numida* L.), flocks of which occur in the swamps of Western Africa, and represent, in those pestilential regions, the turkey of the New World.

(188.) The TETRAONIDÆ form the third family, composed of the partridges, grouse, and quails; all of which birds agree in the extreme shortness of their tails, and of their hind toe: they are also remarkable for a total want of that brilliancy of plumage which so eminently characterises the last family. The genus *Cryptonyx* has been thought to connect the two,—a supposition by no means improbable, yet requiring analogical proof. It is a small group of Oriental birds, highly beautiful from

the elegant form and texture of their crests: three or four species have recently been described. Following these we may notice the grouse: those of the colder latitudes constitute the genus *Tetrao*, while *Pterocles* includes such as inhabit the arid sands of Africa and Southern Europe. The northern parts of our empire still furnish us with several species; but the largest and



most noble grouse of Europe, the cock of the rock (*fig. 176.*), has long been exterminated in Britain. Sometimes the side feathers on the neck of the male birds are developed in a singular manner, so as to resemble little wings,—a character mostly confined to two American species (*Tet. umbellus* and *Cupido*). Several new and imposing additions to this group were brought home by the arctic navigators under Capt. Frank-

lin. The African and Indian grouse (*Pterocles*) have frequently very pointed tails, and the hind toe is very small: heat, with them, appears to be as essential as cold is to the true grouse. But there is one species (*P. setarius* Tem.) which extends its range to the South of France. Nearly all the grouse have the toes and legs more or less covered with soft feathers; but this character disappears in the partridges,—an extensive group scattered in nearly all parts of the Old World, but unknown in the New, where they are represented by the genus *Odontophorus* Vieil. In the quails (*Coturnix*), we have the miniature resemblance of partridges, but the tail is so short as to be nearly imperceptible. Closely approaching to the true quails, we have the genus *Hemipodius*, distinguished by the total absence of the hind toe: the disposition of these little birds is so extremely pugnacious, that quail-fighting is as great an amusement to the Javanese and other Indian nations,

as cock-fighting formerly was to the Europeans. There is, in Tropical America, a very singular race of birds, called Tinnamous by some of the Brazilians, and Ynambus by Azara (*Crypturus* Ill.): they have scarcely any tail, their body is thick, and their whole appearance reminds us of a pigmy bustard; which group they probably represent in the New World. The species are numerous: as for their flesh, we have often tasted it; and consider it, both in whiteness and flavour, infinitely above that of the partridge or pheasant. We believe these birds never perch, as some suppose, but that they live entirely among herbage, principally in the more open tracks of the interior.

(189.) The STRUTHIONIDÆ, forming the fourth family, is composed of the largest birds in creation; namely, the ostrich, the cassowary, and the emu; eminently distinguished by their size, their imbecility of flight, and by never having more than three toes to their feet. Nature has given them but the rudiments of wings, yet she has amply compensated for this deficiency by the gift of most extraordinary speed in running. We find these birds are distributed with a beautiful regard to geographic order: *Rhea* is the American ostrich, *Struthio* the African, *Casuarius* the Asiatic, *Dromiceius* the Australian, and *Otis* the European. From this family we entirely exclude the dodo, which was, in our opinion, the rasorial type of the *Vulturidæ*.

(190.) The COLUMBIDÆ, or pigeons, form our last division. These elegant and lovely birds are placed by M. Cuvier at the end of the *Gallinacea*,—a station which is supported by many weighty considerations. The pigeons appear as much isolated from all other birds as the parrots; for, although the family is particularly numerous, and spread over every part of the world, there does not appear one species, yet discovered, which excites a doubt as to its true affinities. Distinct as they appear, when viewed as a whole, we find they present many remarkable variations among themselves: these form different subordinate groups, to which generic names, by



common consent, have been now applied. The fruit-eating pigeons of Africa and India, forming the genus *Vinago*, are easily known by their very thick, hard, and strong bill, which is also much compressed: their feet are short, and the toes broad, and formed for clasping: they are said to live entirely on fruits, and to frequent the deepest forests: all the species are from India and Africa. The next group, forming our genus *Ptilonopus*, is, without exception, the most beautiful of the whole family. The ground colour of the plumage is generally of a deep rich green, frequently very glossy; while the head and wings are generally variegated with blue, white, purple &c. These belong also to the hot latitudes of the Old World; although they seem, upon the whole, more abundant in the Indian and Australian islands. In many respects, particularly by their feathered feet, these lovely birds resemble the last; but their bill is much more slender, and thus marks the transition to the ordinary pigeons, still classed in the genus *Columba*, and of which the wild and domestic species of Britain are good examples. The passenger pigeons of America offer some slight variation from the European; but not sufficient, perhaps, to detach them as a genus. The turtle doves (*Peristera* Sw.) are a smaller group in stature, and lead us immediately to the ground doves of Tropical America (*Chamæpelis* Sw.): these little birds live in societies, avoid woods, scarcely ever perch upon trees, but are constantly seen upon the ground, like true *Gallinacea*. The remaining forms of this family are very superficially understood: we can only perceive they all tend towards the true rasorial structure; and by their longer legs, crests, wattles, &c., show a decided tendency to unite the family with some other: the most remarkable of these is the crest-crowned pigeon hen (*Ptilophyrus* Sw.), and the most beautiful is the Nicobar pigeon.

(191.) A few observations on the affinities of the gallinaceous family will conclude our survey of this order. In the rapid sketch here given, we have judged it expedient to omit all speculations on the precise

manner in which the primary groups pass into each other: such assertions, when not founded upon complete analysis, can only be received as mere opinions: we shall therefore merely offer a few remarks on the analogy of the pigeons to the *Grallatores*, in further proof of the station given to this family in our arrangement of the *Rasores*.

(192.) On looking to the three aberrant groups of the *Rasores*, in reference to the primary orders of birds, the ostriches (*Struthionidæ*) evidently represent the *Natatores*, by their broad, depressed, and somewhat duck-shaped bill—by their imperfect toes—by their great size—and, lastly, by the wings being as unserviceable for flight as are those of the penguin. Here, then, we have a certain point from whence to start; and the question becomes reduced to the narrower compass of which family, in short, represents the *Grallatores* and the *Tenuirostres*. These groups, it will be remembered, are remarkable for their soft and slender bills; so also are the pigeons: the nostrils are large, long, and covered by a thin soft membrane: the pigeons are the only *Gallinacea* which answer to this description; they have the most slender bills, and their nostrils are long, large, and soft. Grallatorial birds have great strength and power of wing: the humming-birds,—a grallatorial type,—fly swifter than swallows: and pigeons are the only rasorial birds which possess this power to any extent; for it is well known their flight, in general, is very rapid. The wading order is particularly remarkable for being destitute of crests,—one of the most distinguishing characters of the *Scansores* and the *Rasores*: so also are the pigeons one species only out of near 150 being furnished with this appendage; this being a rasorial type in its own circle. Finally, we have a singular analogy preserved between the cuckows and the pigeons, by the rump feathers being of that peculiar formation which belongs to the orioles, the caterpillar-catchers, and several other tenuirostral types scattered among the perchers. With these strong relations before us, we feel no doubt

whatever that the *Columbidæ* represent the *Tenuirostres*: it therefore results that the *Cracidæ* will typify the *Scansores*; with which, as before mentioned, they evince a disposition to unite by absolute affinity: the *Pavonidæ* thus become the typical family, and the *Tetraonidæ* the subtypical.

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### CHAP. XIII.

#### ON THE ORDER OF GRALLATORES, OR WADING BIRDS.

(193.) IN taking leave of the rasorial order, we finally quit all those families which are usually termed *land* birds, and enter among such as habitually frequent the water; but nature, ever prone to follow those "measured steps and slow," by which all her changes are accomplished, places between those great divisions, inhabiting two different elements, a peculiar order, whose habits partake both of the one and of the other. This order is composed of the GRALLATORES, or waders. It comprises all such families as live both on the land and sea, and to whom the one element is as essential as the other. Their food chiefly consists of small marine animals, cast up, or inhabiting the shore. To procure such food, these birds must often wade in the water, or traverse marshes: hence they are provided with remarkably long legs for elevating their body, and slender bills for penetrating into the soft ground. Such as are more especially aquatic have a short web to their toes; while others, like the plovers, which seldom venture into the water, have not this structure. Their wings are very long; for they have no settled district, but fly from shore to shore as the seasons change. Incapable of that perfection in swimming which is developed in the next order, the waders may be termed marine *Rasores*, or fowls of the

sea: they are always walking on its shores, or on the sides of fresh waters; and they depend as much upon their ambulations for seeking sustenance, as upon their wings for those long expeditions they are known to make. Their external structure varies considerably, particularly in regard to the number and disposition of their toes: the bill is generally long, and in the typical groups very slender; the upper mandible is entire; the wings pointed, and the tail invariably very short, the legs being used as a rudder during flight.

(194.) The families under which we consider the waders to be naturally arranged, are these:—1. The ARDEADÆ, or herons;—2. The CHARADRIADÆ, or plovers;—3. The TRINGIDÆ, or sandpipers;—4. The RALLIDÆ, or rails;—5. The TANTALIDÆ, or ibices. These seem, therefore, to follow the order in which we have placed the primary types of the animal kingdom: the second and the third are the typical groups, distinguished by having the hind toe either altogether wanting, or very short and elevated; while the three others, forming the aberrant division, have the hind toe of the usual proportionate length, and placed on the same level with the others. Without attempting, in such a sketch as this, to point out the affinities by which these families may be connected, much less to expatiate upon the union of the different genera which have been arranged under each, we shall merely add a few illustrations of their characters and habits to the scientific details subsequently given.

(195.) The ARDEADÆ, or herons, by means of the cranes, show the strongest affinity to the ostriches, and thus unite the rasorial with the wading order. Nearly all the cranes are large birds, with short and powerless wings; long, and frequently naked, necks; and more terrestrial in their habits than any of their congeners. The beautiful genus *Phosphia*, if truly belonging to this family, is more of a gallinaceous than a wading bird; since it lives in the forests of South America, and is said to be sometimes domesticated for the purpose of guarding

poultry-yards : its note is very singular, and has given rise to its popular name of trumpeter : only two species are known, in size somewhat larger than a domestic fowl. The majestic elegance of the demoiselle cranes (*Anthropoides* Vieil.) is well known, from their frequency in our menageries : the head is generally bare of feathers, and ornamented by a singular lateral crest. We were the first, we believe, who detected this genus in Europe ; specimens of the *Ardea Pavonina* L. having been brought to us, when in Malta, from the little island of Lampedusa, where they are by no means scarce. The more typical cranes (*Grus* Pall.) are large birds, few, indeed, in species, but dispersed over Europe, America, and Asia : they seem to prefer the seclusion and the security of marshes, and feed both upon seeds, herbage, worms, and small reptiles. The *Ardeadæ*, or typical herons, differ from the last in being composed of birds decidedly carnivorous : they are known by a larger and more pointed bill, and by the superior length of the legs. Of this subfamily we have more than one indigenous species. The herons, as a whole, are the most beautiful of all the waders, not so much from the colours of their plumage, as from the elegant crests and prolonged feathers which ornament nearly all the species. They build in societies, but generally feed and live solitary. Like the kingfishers and many of the fissirostral birds, the greater part watch for their prey from a fixed station : a sheltered nook by the side of a river, or a projecting rock by the sea-side, over deep water, frequently serves them as a convenient post ; here they watch for passing fish, which they dexterously spear or transfix by their long and sharp bill. Some of these birds are of a gigantic size ; others are very small ; but all have all very long neck, covered more or less by long and loose feathers. The tiger bitterns (*Tigrisoma* Sw.) are exclusively found in South America, but the true bitterns seem restricted to no particular climate. The boat-bills (*Cancroma* L.) differ most essentially from the herons, since they have a short and very broad bill, shaped something like a boat

with its keel uppermost. Some authors enumerate three, and others only one species ; but they are all peculiar to the New World. The spoon-bills (*Platalea*) show a different, but a no less singular, form of beak, from which their name has been derived. The storks (*Ciconia* L.) are among the largest of the heron family ; one species (*Ciconia gigantea*) measuring, when standing erect, near five feet and a half : they are social and useful birds ; and from destroying vast numbers of reptiles and other vermin, are encouraged, in many countries, to build on the habitations of man : the chin and eyes are bare of feathers ; but in *Mycteria*, which possibly enters into this family, the greatest part of the head and neck is entirely bare : one species inhabits America, one Asia, and one Australia. The tufted umbre forms the African genus *Scopus*, and is the only species known ; the plumage is particularly soft, and the back of the head furnished with a lax tuft of feathers : this is obviously allied to the open-bills (*Anastomus* Ill.), a singular form, remarkable for a thick and very powerful bill, gaping in the middle. It is impossible to divine for what purpose this structure, altogether unique among birds, is intended to perform, since their economy has never been explained. These are the principal genera which appear to enter into this family, of which the herons and cranes form the two most typical groups.

(196.) The CHARADRIADÆ, or plovers, as already intimated, form the subtypical family of this order. It seems connected to the *Ardeadæ* through the medium of the cranes ; the thick-knees, *Ædicnemus* ; or, probably, by the genus *Cariama* of Latham,—a form we have never minutely examined. In this comprehensive group, the feet are long and slender, formed for great speed ; the toes are short, and the hinder one is generally wanting ; the wings are long, and consequently the powers of flight are very great. Herons and rails seek the most secluded recesses of marshy shades. Plovers and sandpipers, on the contrary, live only on sandy and unsheltered shores, or on exposed commons ; they congregate in flocks, and

run with great swiftness; their heads are thick, and their eyes large, dark, and placed far back in the head; the bill is short, with the basal half soft, but the outer half becomes abruptly thick, and is often obsoletely notched, so as closely to resemble that of the pigeon family, which, in the rasorial circle, appears to represent the great order of waders.

(197.) The following genera are the most prominent types:—The oyster-catchers are rather large and strong birds, marked with black and white; and their principal food is supposed to be oysters and other shellfish. One species alone belongs to Europe, the others are natives of South America and Australia. The turnstone (*Strep-silus*) is at once recognised by a short stout bill, rather turned upwards: the name is derived from the habit it possesses of turning up stones on the sea-shore, to feed upon the marine insects concealed beneath. The couriers (*Tachydromus* Ill.), although confined to the Old World, seem to be very widely distributed: one species occasionally visits Europe, and has twice been shot in England; the others, four or five in number, come from the African deserts and the sandy districts of India; they are closely united to the *Pratincoles*, or swallow-plovers, forming the genus *Glareola*. These latter have their wings very long, their bills short, and their tails generally forked; they are small birds, and fly with great celerity. Our beautiful lapwing forms a typical example of the subgenus *Vanellus*. The true plovers (*Charadrias*) form a numerous group, very elegantly although not richly coloured, and dispersed, with little or no variation of form, over the whole world. The feet, as in the spur-winged plovers, are only three-toed, and the wings are much pointed; sometimes there is a slight membrane between the outer and the middle toe, but this is usually wanting. We have two elegant little species on the British coast, and some others occur in Southern Europe. The longshanks (*Himantopus*) have been placed in this group, but we believe they belong to the *Tringidæ*: whatever their true station may be,

they are certainly some of the most singular birds in the family; and, by the excessive length of their legs, they no doubt represent the flamingos: we know but of three species. At the end, or rather at the commencement, of this group, we may place the thick-kneed bustards (*Ædicnemus*); since they are obviously allied to the *Charadriadæ*, or plovers, on one side, and to the *Ardeadæ*, by means of the aberrant cranes, on the other. All the species have been hitherto confined to the Old World; but another, described in this volume, has recently been discovered in the interior of Tropical America. These birds, while they exhibit a strong affinity to the typical plovers, have many points of resemblance to the cranes; so that we can agree with Mr. Vigors in considering *Ædicnemus* to "have an affinity with the earlier groups of the *Gruidæ*," forming part of our *Ardeadæ*; and that they thus connect the present family with that.

(198.) The family of TRINGIDÆ contains the most typical waders, as the snipes, woodcocks, and sandpipers. This group is distinguished from all others by the great length, the slenderness, and the flexibility of the bill, no less than by the delicacy of their legs, and the smallness of the hinder toe. Like the plovers, they are endowed with great powers of flight and of locomotion; since they run with vast celerity, and have the faculty, in part, both of diving and swimming: the bill is even longer than the plover's; but instead of being divided, as it were, into two portions, as in those birds, the culmen is uninterruptedly straight, and the upper mandible is not suddenly bent downwards. The sandpiper or the snipe will give an accurate idea of that general formation which belongs to the whole family. Their geographic dispersion is as wide as their locomotive powers are great. The shores of every part of the world abound with sandpipers and curlews; and the European whimbrel (*Numenius Phæopus*) is even said to have been detected on the coasts of New Holland.

(199.) The genera comprised in this family will now be



briefly glanced over. The true curlews (*Numenius*) have the same long, and generally curved, bill which distinguishes the ibis, but the cheeks and the throat are covered with feathers: the former are chiefly restricted to warm climates; the latter occur more frequently in colder regions. It is worth remarking, that the three species known in Europe are not found in North America, but are replaced in that continent by three others, equal strangers to the European shores. In the avosets (*Recurvirostra*), the curvature of the bill is exactly reversed, the point turning upwards instead of downwards, giving a most unusual appearance to this organ, and which is not found in any other of the order: one species belongs to Europe, another to Asia, a third to America, and a fourth to New Holland. This type seems to be the most aberrant of the *Tringidæ*: its toes are completely webbed, and it probably represents *Phænicopterus* in its own circle. In *Totanus*, which comprises many of the European sandpipers, the species are numerous, and many examples occur in Britain,—as the green sandpiper, the spotted snipe, the redshank, and the common sandpiper. This vernacular name is probably derived from the whistling or piping notes which are uttered by these birds as they run on the sands. They are dispersed all over the world, and are perpetually wandering from one locality to another: the toes are generally free; but sometimes, in species which lead off to other genera, there is a small membrane. The snipes (*Scolopax*), and the woodcocks (*Rusticola*), are too well known to require a popular notice of their habits or structure: the true woodcocks are found both in Europe, America, and Asia; and seem to be further represented in the hot latitudes of the Old World by the elegantly marked genus *Rynchæa*. We pass over several slighter variations seen in the individuals of this family, and scarcely sufficient to constitute subgenera. The *Phalaropes*, or lobefoots, generally placed near the above genera, may here be mentioned, as being the only group furnished with lobes to their

feet sufficiently broad to assist them in swimming. The immediate affinities of these curious birds, however, are very doubtful.

(200.) The RALLIDÆ comprise the rails and water-hens, and constitute a very natural and well-marked family in the order of waders. They have been designated by these familiar names, from their peculiarly harsh notes, and by assuming much of the appearance of gallinaceous or rasorial birds; another proof that the true analogies of nature are often perceived by the vulgar, although passed over by the scientific. The most prominent differences in their structure, when compared with the foregoing families, is the great size of the leg, and the length of the toes, particularly the hinder one: the body is very thin, and unusually flattened; a structure particularly adapted to the habits of rails, since they live for the most part in the thick and entangled recesses of those reeds and aquatic vegetables which clothe the sides of rivers and morasses. They are, for the most part, solitary and timid birds, hiding themselves at the least approach of danger, but quitting their semi-aquatic retreats in the morning and evening, to feed in more open spots: their flight, from the shortness of the wings, is very feeble, but they run with swiftness; and, by the peculiarly compressed form of their body, are able to make their way through dense masses of reeds and high grass with so much facility as to escape, even after being desperately wounded. The flesh of all these birds is delicate; and, from living chiefly upon aquatic seeds and vegetable aliment, they may be considered as aquatic *Gallinacea*.

(201.) The following are among the most obvious genera or subgenera which enter into the present group. Of these the jacanas (*Parra*) are the most singular: they are distinguished by toes of such remarkable length, that, by covering an enormous circumference, these birds can walk upon aquatic plants floating on the surface of the water, with as much ease and security as if they made their way over hard ground. Most of the species

are armed with a short and formidable bony spur on the shoulder of the wings; and the head is either partially naked, or furnished with fleshy wattles. Several species occur in the hot latitudes of America, Africa, and Asia, but the genus is unknown in Europe. It is probable that the typical characters of the family are best seen in the genera *Rallus*, *Crax*, *Gallinula*, and *Fulica*. The purple water-hens are most beautiful and majestic birds, in size nearly as large as a fowl; they have a very thick and strong bill, the corneous front being continued over the fore part of the head like a helmet. There is a fine species found in the marshes of Sicily; and another, almost exactly resembling it, in the distant regions of Australia. The genus *Podoa* probably belongs to the next order.

(202.) The TANTALIDÆ, or ibises, are large and very singular birds, living almost entirely on the swampy banks of rivers and fresh waters, and rarely, if ever, frequenting open shores like the more typical waders. Their habits and structure seem compounded of those belonging to the herons on one side, and to the rails on the other: their flight and size remind us of the former, while their long toes and insectivorous nature are more in unison with the latter. They differ from all others of the waders in having metallic colours upon their plumage, by which we trace their analogy to the *Tenuirostres*; and by their heads being frequently devoid of feathers, as in the *Ampelidæ*, and other tenuirostral types. The genera are few, but well defined and very remarkable; but there are so many marked intervals between them, that much difficulty exists in determining which are the aberrant forms. The majority live in tropical latitudes.

(203.) Having now enumerated the chief groups in the five leading families of this order, let us endeavour to illustrate the families themselves, and see how far their analogical relations will sanction the order of progression in which we have here placed them. For this purpose we had better place this series of the *Gral-*

*latores* by the side of that which constitutes the *Insessores*, and the following analogical characters may thus be more clearly stated.

GRALLATORES and INSESSORES. — Analogies.

Families of the <i>Grallatores</i> .	<i>Typical Characters</i> .	Tribes of the <i>Insessores</i> .
TRINGIDÆ.	{ Bill long, very straight; each pre- eminently typical.	} CONIROSTRES.
CHARADRIADÆ.	{ Bill short, upper mandible abruptly curved near the tip, and bent over the lower.	} DENTIROSTRES.
ARDEADÆ.	{ Wings long, ample, quill feathers emarginate at their tips; seize their prey by a sudden dart.	} FISSIROSTRES.
TANTALIDÆ.	Bill very long; plumage metallic.	TENUIROSTRES.
RALLIDÆ.	{ Bill and wings very short; legs strong; toes long; live on the ground.	} SCANSORES.

It will almost invariably be found, throughout all groups in the vast order of perchers, that those which represent the *Conirostres* have the bill longer, straighter, and more conic than any that belong to the subtypical group which follows it. Out of instances almost innumerable, which confirm this law, we may cite the woodpeckers among the *Scansores*, the true starlings in the circle of the *Sturnidæ*, the *Coccothraustinæ* among the finches, not to mention the same character in minor groups: hence, also, in the families before us, the *Tringidæ* have the straightest and most conic bills of all those waders which possess the *other* typical distinctions; and they thus show the perfection of *their* circle, just as much as the *Conirostres* do of the other. We think that no unprejudiced ornithologist will deny that the *Charadriadæ*, or plovers, are closely and intimately connected to the sandpipers, and that these two families are the two most typical of the whole. Their general conformation, and the peculiarity of their being *the only two* which have the hinder toe, where it exists, elevated above the others, is, in our opinion, demonstrative evidence on this point: if this be conceded, it follows that the *Charadriadæ* are the subtypical group, and are consequently analogous to the *Dentirostres*. But how,

it may be asked, can this be made out by actual analogy of structure? To this question we should merely call the attention of the inquirer to the peculiar shape of the bill of the plover (*fig. 22. a*, Vol. I. p. 54.). Unlike that of all other waders, it seems compounded of two different forms: the basal half is straight and soft, like that of a *Tringa*; but the other extremity suddenly becomes thick, strong, and hard; the culmen rises abruptly, and then takes a regular curve downwards, so as to present a miniature resemblance, in its contour, to that form so universal among the *Dentirostres*: that the resemblance, or rather the analogy, is remote, naturally follows, because the groups themselves are very remote; yet this, in our estimation, does not affect the question, which is simply this,—Do not the plovers follow the sandpipers?—or, if this position was doubtful, it might be made a question of analogy; and then it might be asked, What family of the *Grallatores* presents the greatest resemblance to the *Dentirostres*. We know it is the opinion of some, that this resemblance is to be found in the *Ardeadæ*, rather than the *Charadriadæ*. And we will even confess, than in the early stages of our investigating this subject, we were of this opinion; the more so, because we have generally found that the locations assigned by Mr. Vigor to the large groups or families of birds are generally correct, although, from want of analysis, we do not believe he has been equally fortunate in the distribution of their contents. Be this, however, as it may, it seems to us, that if any group among the waders is to represent the *Fissirostres*, that group is composed of the herons: no other waders watch for their prey from a fixed station; they are the largest of all the *Grallatores*; and, by their affinity to the storks, they unquestionably pass into the rasorial circle: as for their possessing one of the rasorial characters,—that of long ornamental crests,—it is only another instance of what we have frequently alluded to, that in aberrant groups standing opposite each other, some of the typical characters of one will be imparted to the other. Our position, therefore, that in every com-

prehensile circle there is one group eminently distinguished by crests, still holds good in this ; and that the *Grallatores* likewise present us with another group of equal rank, where the wings are convex and feeble, the bill short and hard, and the feet remarkably large and strong, is abundantly proved by the rails, which are the aquatic poultry of the waders. Imperfection of foot, moreover, which is another of the fissirostral characters, must not be looked for in an order like this, where the whole of the families seek their food on the ground, and must therefore be able to walk remarkably well. These considerations, joined with others, one of which we shall presently notice, have decided us in considering the *Ardeadæ* as the fissirostral type of the *Grallatores* ; and we therefore pass to the next analogy, or that which we consider to exist between the *Ibis* and the *Tenuirostres*. The different modifications of the Linnæan genus *Tantalus*, certainly comprehend those birds furthest removed from the typical perfection of the waders : their bill, although long, is more solid ; the face, and sometimes the head, is naked (as we see in the *Ampelidæ* and other corresponding groups) ; and the plumage, totally unlike the more typical waders, is generally glossed with rich metallic colours : had they but remarkably short legs, they would, in fact, be gigantic humming-birds ; and even that which is entirely crimson finds its representative in such birds, similarly coloured, as analysis proves to be tenuirostral types. The analogy of the *Rallidæ* to the *Rasores* has already been alluded to, and is too obvious to require further elucidation. We have, unfortunately, no space for defining, so far as our researches have yet gone, what appear to be the precise limits or the connecting links of these families : but the primary groups, as now arranged, furnish a strong corroboration that the series is natural, merely from this result, — that we find the two first distinguished by having the hinder toe, where it exists, very small and elevated ; while in the aberrant group, composed of the *Ardeadæ*, the *Tantalidæ*, and the *Rallidæ*, the hinder

toe is fully developed, and is placed on the same level as the other toes. It would be highly interesting to elucidate other peculiarities of the grallatorial groups, by comparing them, in the above manner, with other circles; but this cannot, on the present occasion, be done, and we must now pass onward to the succeeding order.

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## CHAP. XIV.

### ON THE ORDER OF NATATORES, OR SWIMMING BIRDS.

(204.) THE last great division of the ornithological circle is composed of such families as habitually live upon the waters, and are hence called Natatorial. Their feet, which are almost always very short in proportion to the bulk of the body, are generally placed far behind the equilibrium, and are thus especially adapted for swimming: the toes are rather long, and are more or less united by a thin, firm, expansile membrane, or web: the feet may thus be compared to broad oars or paddles, which oppose a considerable resistance to the water, and enable these birds to swim and dive with the greatest facility. They are the only order, except the waders, which have the neck very considerably longer than the legs, — a beautiful provision of nature, since they are thus enabled to seize their food considerably above or beneath the equal level of the element they live upon. The structure of the plumage is particularly adapted to resist wet: its outer surface is close, compact, smooth, and somewhat oily; beneath this there is a second series of feathers, of a soft and downy texture, which is not only impenetrable to water, but calculated at the same time to keep the body in a constant and equal state of warmth, and thus to guard the bird from those injurious effects resulting from sudden trans-

itions of cold and heat. As the ocean is their element, so do its waters supply their food: some live both upon aquatic plants and submarine insects; but the greatest proportion prey upon fish, and those innumerable swimming and creeping things which subsist in the sea, and cover its shores.

(205.) The aquatic order has been divided into the following families \*, which have every appearance of being the natural primary divisions: — 1. The Ducks (ANATIDÆ); — 2. The Gulls (LARIDÆ); — 3. The Pelicans (PELICANIDÆ); — 4. The Penguins (ALCIDÆ); — 5. The Divers (COLYMBIDÆ). The three first are distinguished by the length of the wings, which enable them to fly well; while, in the two latter, these members are so short, that they seem perfectly useless for any other purpose than to serve the office of fins. A rapid survey of the prominent characters and groups of these families is all that can be here said of them.

(206.) The analogies of the primary groups of the natatorial order have never been made out, and they are, in truth, involved in much difficulty; at least, if we are to judge from the trouble their investigation has cost us. There can be no doubt, indeed, that the typical perfection of the order rests with those birds whose structure is more especially adapted for diving and swimming; and it therefore follows, as the result of this conclusion, that the *Colymbidæ*, or divers, and the *Alcidæ*, or auks, constitute the two primary types: the lengthened and conic bill of the first of these families assimilates with that form belonging to the *Conirostres*; and we may, therefore, safely infer that it represents that tribe. The *Alcidæ*, on the other hand, have a short and broad bill, considerably curved on the culmen, where it is gradually arched from the base; while the tip, although not toothed, is bent over the lower mandible: this, in fact, is the general outline of the bill of dentirostral types, even in remote groups, such as the *Psittacidæ*, among the *Scansores*; and it is

\* Vigors, Linn. Trans. xiv.



rather singular that these auks are often called sea-parrots: this analogy, indeed, has been remarked before; but without any suspicion, as it would seem, that both of these families were dentirostral types. We now come to the aberrant families, in which a most singular commixture of characters is to be found. It has, as we conceive, been abundantly proved, that the first, or rather the most prevalent, of all the characters assigned to the rasorial type of nature, is a marked instinct for domestication. If we follow up this theory for the purpose of deciding which of the remaining three is the rasorial family of the natatorial order, we must at once fix upon the *Anatidæ*, or ducks; for, while nearly one half of the species in this group have been domesticated, time out of mind, in all countries, and by all civilised nations, there is not a single species among the two remaining families, the pelicans and the gulls, of which the same can be truly affirmed,—both, in fact, are peculiarly wild and untameable, living, for the most part, on the ocean, and only frequenting the land for the purpose of breeding, or to perch and fish from a rock. Having now made out, in some measure, the analogies of three of the families, there remain two others, the *Pelicanidæ* and the *Laridæ*, and we are to determine which of these is the most aberrant; in other words, which has the least development of the natatorial characters. By putting the question in this shape, we are immediately led to fix upon the gulls, from their having the longest legs of all the *Natatores*, and also from their habits being the most terrestrial; they are, in point of fact, the waders of the swimming order, as every one knows who has seen them walking on the shore, intermixed with their prototypes, the true *Grallatores*. If this theory be correct,—and it seems well borne out by the facts of the case,—it inevitably follows that the *Pelicanidæ* are analogous to the only remaining type,—that is, the fissirostral or natatorial: this is not only the theoretical conclusion we should arrive at

from what we have already stated, but is that also which will result from attentively considering the characteristic distinctions of this family. As representatives of the natatorial form, they have the shortest feet of any birds in existence; they live upon the ocean; and they are the most bulky of the order: as, on the other hand, representing the *Fissirostres*, the tip of their bill is suddenly hooked; they have an enormous wide mouth; and they possess, above all others, the most astonishing powers of flight.\* Condensing these remarks into a tabular form, we may state the analogies thus:—

ANALOGIES of the NATATORIAL FAMILIES.

Families of the Swimming Order.	General Analogies.	Tribes of the <i>Insessores</i> .	Orders of Birds.
COLYMBIDÆ.	{ Pre-eminently typical of their own circles; bill lengthened, conic.	CONIROSTRES.	INSESSORES.
ALCIDÆ.	{ Bill short, arched above, the tip bent down.	DENTIROSTRES.	RAPTORES.
PELECANIDÆ.	{ Size large; mouth very wide; feet very short and imperfect; live at sea.	FISSIROSTRES.	NATATORES.
LARIDÆ.	{ Bill slender; nostrils very long; legs lengthened; ambulating, but webbed.	TENUIROSTRES.	GRALLATORES.
ANATIDÆ.	{ Eminently domestic; wings short, convex.	SCANSORES.	RASORES.

(207.) Now this exposition will, probably, be thought, by most of our readers, sufficiently satisfactory; and yet the experienced ornithologist, who remembers what we have advanced on a former occasion†, will perceive it is beset with many difficulties and apparent contradictions. These we shall now state, and endeavour to answer. It is far from our wish or intention to strengthen our theory by glossing over objections, as if all our conclusions were infallible, or that no exceptions existed to the truth of those laws which we venture to think have regulated the variations of the animal kingdom. We have been accused, indeed, of being too dogmatical;

\* See more particularly, on the *Tachipetes*, Vol. I. p. 162.

† Class. of Animals, p. 257.

and yet an impartial reader must have perceived our anxiety, on many occasions, to state all those points upon which we entertain doubts, that they may be decided by others, rather than ourselves. And it is for the very purpose of doing this, in the present instance, that we have entered much more into the analogies of this order than we intended, or than our limited space will sanction. The objections, therefore, to the above table are these:—It has been seen among all the groups of the *Insessores*, and even among quadrupeds, that a broad and flat muzzle is one of the primary indications of the fissirostral type; it therefore would seem to follow, that *that* type, in the present family, must be the ducks, and not the pelicans: these latter, again, as in the genus *Carbo*, have that peculiar rigidity of tail which indicates the scansorial, and not the fissirostral structure: most of these birds, also, have crests upon their heads; a further evidence of their analogy to the *Rasores*, and not to the *Fissirostres*. To these facts, and the inferences that might thus be drawn from them, we should reply, that this interchange of characters in the aberrant groups of an aberrant circle (for such is the *Natatores* among the orders of birds) is by no means uncommon, and that we have repeatedly adverted to it in other instances where the circle of affinities were even stronger than in this. A broad and flat bill is, indeed, *one* of the primary distinctions of the natatorial type, but it is not the only one; and when we find a preponderance of the characters of any given type found in any one particular family, it seems to us that we must look to the coincidences, and not to the exceptions. The same may be said regarding the stiff tails of the *Pelicanidæ*: this is the only scansorial character they have borrowed, as it were, from the *Anatidæ*, who, in return, seem to have assumed the flat depressed bill of the fissirostral *Pelicanidæ*. On no other principle, in short, than the one above stated, can we possibly account for this singular combination of opposite characters found in the two extreme groups of the *Natatores*,—the *Anatidæ*

and the *Pelicanidæ*. No great stress, after all, must be laid upon the rigid tail of the latter, because we find precisely the same character in the genus *Chætura*, which is one of the most obvious fissirostral types. We were finally convinced, however, of the analogy of the *Pelicanidæ* to the *Fissirostres*, by a circumstance apparently trivial in itself, but which, when viewed in reference to this intricate question, becomes one of high importance. According to some observations which have been recently communicated to us\*, the cormorant, after catching a fish, is frequently, if not always, in the habit of throwing it up in the air and catching it in its fall! just in the manner of the toucans and the hornbills. This unlooked-for and extraordinary demonstration of the fissirostral type appears to us perfectly conclusive, and supersedes all necessity for prosecuting this inquiry further.

(208.) The ANATIDÆ, or ducks, constitute the first family of the natatorial circle, after quitting that of the waders. It includes a very natural, and for the most part a very strongly marked, group; wherein we have the freshwater and marine ducks, the geese and swans, the mergansers, and finally the flamingos. All these are easily distinguished by their short, thick, and generally broad bills, the sides of which are furnished with flexible, lamellar, transverse plates or ridges, which appear analogous to teeth, while the tongue is very large and fleshy. As it is unnecessary to dwell upon the general characters of birds so well known to ordinary observers, we may at once proceed to a slight glance at the primary divisions above intimated, viz.—1. The *Anatinæ*, or river ducks; 2. The *Fuliginæ*, or sea ducks; 3. The *Merganinæ*, or mergansers; 4. The *Phænicoptinæ*, or flamingos; and, 5. The *Anserinæ*, or geese. Each of these appear to hold the rank of subfamilies, for although some contain but few forms, others—especially the two

\* This has been repeatedly witnessed by one of my sisters, who, at a marine cottage we have at Hoylake, on the Cheshire coast, was very fond of looking through a telescope at the cormorants, as they fished on the rocks of Hilbury Island.

first — are very full, and comprise both genera and subgenera.

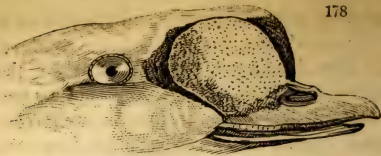
(209.) The *Anatinæ*, or river ducks, show the typical perfection of the whole family, in possessing that strong instinct for domestication so eminently characteristic of the rasorial type. They are very good swimmers, but not expert divers; this latter faculty being possessed in



a much greater degree by the marine ducks of the next division, where the hind toe (*fig. 177. a*) is much broader than in the

fluvatile species (*b*): this difference, in fact, forms the typical distinction of the two divisions; and however inexplicable the fact may appear to us, it is nevertheless certain, that all ducks with a very broad hind toe are the most perfect divers. In the typical genus *Anas*, at the head of which stands the shoveller duck (*A. chapeata* Lin.); the lamellæ of the bill project in different degrees beyond the margin. These, after describing their own circle of subgenera, are followed by the sheldrakes and Muscovy ducks. The beautiful genus *Dendronessa* Sw., composed of the summer ducks, next succeeds, as the rasorial genus; then follow the widgeons (*Macera*); and the fissirostral type of *Anserella*, or the little geese ducks of India, conduct us back to the subgenus *Boschas* among the typical ducks. This, in our estimation, is the true circle of the *Anatinæ*.

(210.) The *Fuligulinæ*, or marine ducks, in their natural disposition have none of the domestic habits of the last. They live out at sea, and, like all raptorial types are naturally very shy and wild; while their distinguishing character, as manifested in the structure of the hind toe, has already been explained. The genera are composed of — 1. *Somateria*, or the eiders, in which is the beautiful king duck (*fig. 178.*); 2. *Oidemia*, or the scoters; 3. *Fuligula*, or the pochards; 4. *Clangula*, or the golden eyes; and, 5. *Heralda*, or the long-tails. The analogical resemblances which these groups bear to the five genera of the freshwater ducks are very striking,



but we have no room to lay them before the reader. Among the *Merganidæ* the forms are very few, and consequently their circular succession cannot be traced.

(211.) The flamingos (*Phœnicoptinæ*, fig. 179.) have hitherto been arranged by all writers with the waders; and it must be confessed that their very long legs totally unlike the rest of the *Anatidæ*, is much in favour

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of such an arrangement. Nevertheless this character, however important, is not sufficient in itself to outweigh others still more so. Although the bill of the flamingo is bent, and otherwise greatly modified from that of a duck, it is essentially formed for performing the same office; the margins are divided into laminae, which shows that the food is taken in the same way; while the feet, however long, have the webbed toes of a duck. We consider this form, in short, as no other than the grallatorial type of the family of *Anatidæ*; and did our space permit, we should lay before the ornithologist the

various tests by which this station may be demonstrated natural. It may be noticed, however, that even by its scarlet plumage it finds its analogy in the grallatorial family of *Tantalidæ*, and even in *Tichodroma*, the corresponding type in the *Certhiadæ*; while a curved bill, and long legs, are two of the chief distinctions of all grallatorial representatives. As being

the most aberrant of all the *Anatidæ*, the flamingo consequently becomes that form by which the *Natatores* are united to the *Grallatores*.

(212.) The ANSERINÆ, or geese, constitute the rasorial subfamily of the whole group. Although much nearer related to the true duck than are the flamingos, they are, nevertheless, much more terrestrial in their habits; and in their strong and high legs, fondness for grain and vegetables, and comparative shortness of wing, we trace many of the chief characters of the rasorial type. The first form, after quitting the flamingos, seems to be the natatorial genus *Cygnus*, which, by its great length of neck, and large sized body, softens down the interval between the ducks and the *Phænicoptinæ*. We next come to the true geese, forming the genus *Anser*, the typical division of the whole group, and which contains most, if not all, of the usual subgenera. The tree geese (or ducks, as they have been called) next follow; among which, the subgenus *Chenaloplex* will probably find a place. *Plectropterus* is the rasorial genus, analogous, by its spurwings, to the *Rallidæ*; while the Australian genus *Cereopsis* (equally representing the pigeons), appears alone necessary to complete this circle.

(213.) The remaining families, not having been fully analysed, will be more briefly noticed. The COLYMBIDÆ are composed of the guillemots, divers, and grebes: with the exception of the last, they are all marine birds, with a lengthened, strong, straight bill; the wings are generally remarkably short; and the feet placed so far back out of the equilibrium of the body, that they will not allow the birds to walk upon the land even so well as ducks. They are few in number, and these are chiefly confined to the northern regions, although some species of grebe occur both in South America and New Holland: the tails of all are remarkably short. The genera yet determined are only four. The first (*Colymbus*) comprehends the true divers, of which all the three species hitherto discovered are found on the shores of Britain.

although much more common on the arctic circle. The second (*Uria*) includes the guillemots, distinguished from the last by the absence of the hinder toe; and these again are confined to the Northern Ocean. The third and fourth are *Podiceps* and *Podia*, both of which agree in having the membrane between the toes divided into lobes, similar to those on the feet of the coot; but in the first the hinder toe is lobated, while in the latter it is simple. The grebes are the most imperfect flyers, since the divers have their wings not much shorter than several of the ducks.

(214.) The *ALCIDÆ* form the third principal family, and include the penguins, the puffins, and all those singularly constructed groups where the wings are abortive, or, in other words, assume more the appearance, as they perform the office, of fins: the feet, moreover, are so little adapted for walking, that even the obsolete toe, seen in the ducks and divers, is here generally wanting. We thus see the power of swimming developed in the most perfect manner in birds which, in every other faculty, are the most imperfect in creation. The natural series of the genera, by some, have been commenced with *Uria*; by others, with some of the *Alcæ*, or puffins. The little auk (*Mergulus*) has been detached on account of its short, thick, and convex bill, the base of which is covered with the frontal feathers: there is but one species, a polar bird, yet sometimes seen on the British coasts: this form may probably be represented in the southern hemisphere by the crested auks (*Phaleris* Tem.)—the species of which are but obscurely understood: the arctic puffin, and two other northern species, form the restricted genus *Mormon*. The great auk and the razorbill are now almost the only species left in the original genus *Alca* of Linnæus: the first is nearly the size of a goose, and is occasionally found in the arctic seas: this singular and very rare bird is totally without the power of flight; and the latter species can only raise itself on wing just above the surface of the sea.



The razor-bill lays but a single egg, and, like most of its tribe, lives upon marine insects and small fish. The true penguins (*Apteniodytes*) are more properly confined to the southern seas, where they represent our auks: they are, in general, much larger birds, and the feathers lie so close on the body as to appear like scales: the feet are placed so far backward, that, when upon land, the penguin stands nearly erect; at such times they may be approached with ease; but when once they have gained the water, they swim with the ease and rapidity of a fish, springing several feet over any object that may impede their course, and then once more continuing their course. One species, the *Apteniodytes chrysocoma*, of Van Diemen's Land, is stated to proceed on land by leaps or bounds, rather than by walking. On the whole, these are the most singular of all aquatic birds, and clearly point out that nature is about to pass from the birds to the fishes.

(215.) The PELICANIDÆ, or pelicans, are arranged under the fourth division. These birds are very different from the last, for they fly with ease, and even with swiftness. They are a large, voracious, and wandering tribe, living for the most part on the ocean, and seldom approach land but at the season of incubation: the bill is long, and armed at the end with an abrupt hook; the width of the gape is excessive; the face is generally bare of feathers, and the skin of the throat is sometimes so extensible as to hang down like a bag: by this curious organisation, the pelicans are able to swallow fish of a very large size, and the whole family may be termed oceanic vultures. The genera may be thus briefly noticed:—Of the true pelicans (*Pelicanus*) there appear to be three or four species, all remarkable for the enormous size to which the skin of the throat can be expanded. One species (*Pel. onocrotalus*), which is the best known, is occasionally found in the South of Europe, and is frequently seen in menageries. The cormorants (*Carbo*) have the bill shorter, and the pouch much smaller; they are found in most lati-

tudes, and not only fly well, but swim and dive with great swiftness. The provident Chinese avail themselves of these birds, which they train to catch fish, a ring being put round the neck to prevent the game being swallowed: the common cormorant is a perfect example of this group. The gannet is the only British bird of the genus *Dysporus*, although several others have been discovered: they seem to be general wanderers over the whole world, and is that particular race which the frigate pelicans select more than any other as objects of attack and plunder. The history of the frigate pelicans, no less than their whole structure, is highly interesting: they are truly rapacious birds, endowed with a sight remarkably piercing, with an immense expanse and power of wing, and with the most determined audacity; they attack other birds nearly of their own size, forcing them to disgorge or relinquish the fish they may have caught. We know not a more imposing sight than half a dozen of these aerial birds soaring in mid-air, and suddenly falling down into the sea upon a shoal of fish that have approached too near the surface. At other times, during a storm, they soar to such a height, that, notwithstanding their size, they appear but as specks in the firmament: all their powers of motion, in fact, are concentrated in the wings; for the feet are so short and imbecile, that when upon the ground they may be approached with perfect ease. These birds, although common in the tropical seas, are not found beyond, and are thought to belong but to one species. The same regions, as their name implies, are inhabited by the tropic-birds (*Phæton*), whose flight, although inferior, is frequently as high as that of the frigate-bird: there are but two species, both having two of the tail feathers very long. The darters (*Plotus*) terminate this family: they are distinguished from all the preceding by the excessive length and slenderness of the neck, which seems like the body of a serpent united to that of a cormorant; the bill is very sharp; and this,

joined to the form of the neck, renders it probable that they dart upon their prey something in the same manner as is done by the herons. Of two species already known, one is stated to inhabit both the East and West Indies, but this is somewhat doubtful.

(216.) The LARIDÆ, or gulls, constitute a much more numerous family than either of the three last. Their structure is also more perfect, in a general sense, although inferior in that particular construction which constitutes the perfection of the order, namely, the power of swimming and diving. The wings are very long; and the feet, although webbed, enable these birds to walk about with perfect ease on the shore, in search of food: the hind toe is very small, sometimes wanting; but the legs are nearly as long as in some of the wading birds, of which they are the representatives: the bill is slender, much compressed, and is gradually, but not abruptly, bent. Gulls are well known to be gregarious, frequently associating in large flocks, and devouring every description of animal and vegetable food: they swim with tolerable facility, but cannot dive well: their power of flying is very great, for many races are almost constantly upon the wing, and they brave the most violent storms. Most of the genera are universally distributed.

(217.) The genera may be noticed in the following order: — The terns, or sea-swallows (*Sterna*), constitute the fissirostral type: they have remarkably long wings and slender bills; the tail is forked; and the plumage generally is of a delicate pearl white, with more or less black upon the head: the species are numerous, and occur in both hemispheres. The extraordinary genus, *Rhynchops*, or skimmer, although possessing much of the general habits of the terns, is eminently distinguished by the singular form of its bill (Vol. I. p. 72.), the upper mandible of which is considerably shorter than the under, and appears as if one third of the length had been broken off: three species have been described, to which we now add

a fourth : they skim over the surface of the ocean with great swiftness, and scoop up small marine insects and other animals. The true, or typical, gulls (*Larus*) are a numerous race, dispersed in every clime, and so closely resembling each other in plumage, that many of the species are even now but imperfectly understood ; they bear a close resemblance, in general appearance, to the terns, but the bill is stronger, and the upper mandible much more curved towards the end : many are of large size ; and all are voracious devourers of fish, and of every marine animal, dead or alive, which is cast upon the shore : they particularly abound in northern latitudes, but seem to range over the whole world of waters. The parasitic gulls (*Lestris*) are the raptorial representatives, and are almost confined to cold regions : they are known by their stronger conformation, their different shaped bill, and the rough scales upon their feet : these birds, like the frigate cormorants, derive their chief supply of food by robbing their more feeble congeners ; they pursue the largest gulls, and make them disgorge or relinquish their hard-earned game. The black-toed and the arctic gulls belong to this group, and both are occasionally seen on the northern shores of Britain. The genus *Diomedea* includes the well-known and gigantic albatrosses, the most powerful and bulky of the whole family ; they are oceanic birds, living almost constantly out at sea, but are more particularly abundant in the Pacific Ocean : we have no examples in Britain, or, indeed, in Europe : the extent of their outspread wings is enormous ; yet their flight, except in stormy weather, is by no means lofty : like all the rapacious birds of the ocean, they are most voracious, and their flesh is rank and repulsive. The genus *Haladroma* comprises such of the albatrosses as have the bill more resembling that of the petrels, while they agree with the former in being destitute of a hind toe ; but only one or two species have as yet been clearly ascertained. The true petrels (*Procellaria*) have the lower mandible trunc-

ated: we have a native example of this genus in the fulmar (*P. glacialis*), but nearly all the rest inhabit the antarctic regions: they are continually out at sea, even in the most violent storms: Cuvier mentions, that their French name of *Petit Pierre* is derived from their habit of walking on the water by the help of their wings. The shearwater petrel, and some others, have been separated under the very objectionable name of *Puffinus*, from the different construction of their nostrils, and of the lower mandible: there is one species, the English puffin (*P. Anglorum* Tem.), which appears to be confined to the northern coasts of Scotland. The genus *Thalassidroma* Vig. differs from the other petrels, by having the legs longer, and the bill somewhat shorter: it is composed of those small birds well known to sailors by the vulgar name of Mother Cary's chickens. We may here also mention the subgenus *Pachyptila*, as being that form which, of all in this family, shows the nearest approach to the *Anatidæ*, with which we commenced the circle: the bill retains the general form of the petrels, but the base is considerably dilated, and its inner margins are found to be furnished with teeth-like laminae. The most aberrant type of the *Laridæ* appears to be the genus *Dromas* of Paykull, a long-legged bird, analogous to the flamingos: this we have never yet seen, but Temminck and others consider it has an affinity with the terns. The circle of the *Laridæ*, no less than that of the natatorial order, has now been traced, and we can only regret that our limited space prevents us from laying before the reader some of the very many analogies by which this arrangement may be confirmed.

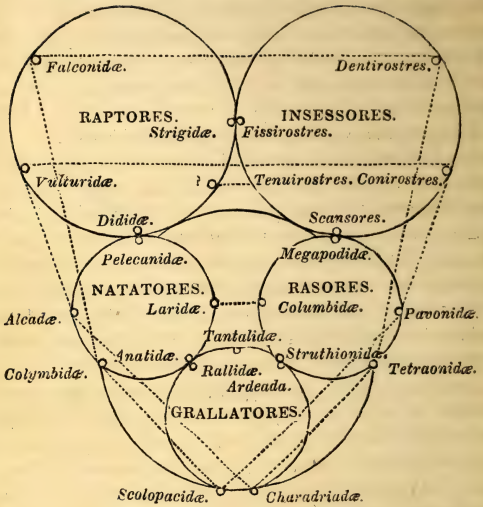
(218.) With the following diagram, which concentrates the latest results of my investigation of the ornithological circle, I shall now close this part of the treatise. There have been times, during its progress, when the discovery of what I considered a fresh glimpse into the harmony of creation has imparted a confidence and a boldness to my style, which many may attribute

to arrogance and self-sufficiency. It may be so: and yet it has only been these fits of enthusiasm which have borne me onward, amidst those doubts, and discouragements, and difficulties which always attend an original line of investigation. When I reflect, that what is now laid before the public, is the fruit of thirteen years' study and meditation — almost incessant — I feel at times even painfully sensible that these results are so inadequate to what might have been expected; and that much more might have been accomplished, if the same labour had been bestowed upon the subject by others. Few, indeed, can be more dissatisfied with the imperfect conclusions contained in these volumes, than myself; and I almost regret that I have brought them before the public in such an unfinished state. Had health, and fortune, and freedom from professional duties permitted, I should have elaborated this part of my researches much more, by visiting the public Museums of Europe, adding more to my own by extensive purchases at home, and by employing collectors abroad: but few private fortunes can command these resources; and no assistance or patronage, in cases like this, can be expected from our government. The scientific world must therefore rest satisfied, or dissatisfied, with what I have been able to do, small as it appears. Misapplications of my own theory will, doubtless, be found in the subsequent pages; and those who will point them out by making a better arrangement of the groups, upon principles equally universal and comprehensive, will deserve well of me, and of science at large. But these errors, however numerous they may be, touch not the theory itself. Whatever may befall other circles, those of the *Psittacidae* and the *Picianæ* I have found the most perfect; and they are consequently those which, in the most minute details of variation, are the best calculated to test the truth of the theory itself. In the latter, more especially, I have even found three out of the five generic circles to be actually perfect, even so far as my own limited knowledge extends. There is also a peculiar advantage

attending the investigation of these two groups, as well as that of the *Trochilidæ*, which is this; — that however naturalists may differ about the primary nature of other birds, they will be unanimous respecting these; a parrot or a woodpecker *cannot* belong to any other groups than their own: Nature herself has separated and characterised them from all others; so that the investigator knows at once the extent of the group he has to deal with, and he has only to make out its *internal relations*. In short, I consider the *Picianæ* to be so perfect a circle, that I have been accustomed to view it, in all doubts and misgivings regarding others, as that upon which I could fall back, as upon a strong and impregnable hold, for demonstrating those first principles of the natural system I have, perhaps, too boldly announced. In regard to nearly all others, I may employ the words of two eminent writers who have had to contend with the same difficulties in the same line of inquiry. “When we cannot represent Nature as she is, we must endeavour to represent her as she appears to be; for if we suspend our observations in apprehension of committing an error, we shall soon cease to represent her at all.” \*

\* MM. Horsfield and Vigors; Linn. Trans. xv. 328.

AVES.





## PART IV.

SYNOPSIS OF A NATURAL ARRANGEMENT  
OF BIRDS.

(219.) IN the following Synopsis there are a few alterations in the arrangement of the groups from what they appear in the foregoing part: this has resulted from further analysis, and by incorporating our researches up to the latest time. An attentive comparison of *Gypogeranus* with the *Polyborus Braziliensis*, and these again with some of the long-legged eagles, has at length convinced us that the first is no other than the rasorial type of the Aquiline circle: the more so, as its long legs and elegant crest are at once explained by this analogy. The numerous variations in the forms of the eagles and the buzzards induce us, also, to adopt Mr. Vigors's plan of considering the primary divisions of the FALCONIDÆ as so many subfamilies, rather than as genera, and in this group many other alterations have been made. Our suspicions with regard to the situation of the genus *Pipillo* have been completely verified by the new species subsequently described; so that it will now be found (with *Arremon* as a subgenus) arranged in the Tanagrine circle. The genus *Megapodius*, and not *Crax*, turns out to be the type of the rasorial division of the *Rasores*; and *Scolopax*, instead of *Tringa*, stands at the head of the *Grallatores*. The minor alterations it is not necessary to particularise.

(220.) The specific names, placed under each group are not always those by which the bird is mentioned in the work referred to; for many of the names used by these authors, even when good, have not the claim of priority, or the birds have not been placed in the group under which they here stand: the nomenclature, therefore, must be rather considered our own, than that of

the authors quoted ; since, in such cases, we have used their figures as references only, without adopting their nomenclature. Where original specific names are not erroneous, or otherwise unobjectionable, we have, as a matter of course, always retained them ; choosing, where necessary, such as have the additional claim of priority. Our original intention was to have enumerated all the authenticated species of each group ; but this plan, setting aside its difficulty, would have swelled the volume so much that it was soon abandoned. Those groups which we consider *GENERIC* are printed in capitals, the *subgenera* in Italics. There are some few additional ones, proposed by authors, which appear good ; but as they have not yet fallen under our examination, we have not, from ignorance of their affinities, ventured to adopt them.

(221.) We wish to take this opportunity of stating those principles which have guided us in the adoption of names, both generic and specific. There are certain canons, in regard to nomenclature, long since laid down by the fathers of science, to which all their followers, as we conceive, are bound to adhere : these, in the first instance, regard the construction of names ; and, secondly, their priority. Now it seems to us, that an author, who violates the first, has no title whatever to found his claim upon the second. Priority is a sure ground of preference, provided the preliminary conditions of securing it have been complied with. We cannot, therefore, agree with those naturalists who adopt a barbarous, a fanciful, or a mythological name in ornithology, merely because it claims priority over another which is both classic and expressive ; in other words, founded upon the primary rules of nomenclature, and therefore having a legitimate claim for general adoption, which the other certainly has not. If we are to take it as a principle, that priority alone is to guide us in our choice of names, we must *act* on that principle, and at once expunge all those other rules, laid down by Linnæus, to insure a system of classic nomenclature ; we must cancel the names of M. Cuvier, and substitute

those of M. Vieillot, — for the latter were certainly published first: but our innovations will not cease here; M. Cuvier's must give way to Brisson's, and many of these must be rejected for those of Willoughby and Ray. Let us see, therefore, how this absolute rule would work in the family of *Psittacidae*, — a group which has of late been overloaded with a host of new names. Vieillot's *Plectolophus* must give place to Brisson's *Cacatua*, — still retained, indeed, by many of the French writers; *Ara* must be substituted for *Macrocerus*; *Psittacus*, for Marcgrave's name of *Maracara*; *Tuiete*, of Marcgrave and Ray, has the priority of *Agapornis*; and *Jendaya*, of the same authors, must be used instead of *Conurus*. In this manner, if we wish to act strictly up to our rule of *unconditional priority*, — and without so doing it would not be a *primary* rule, — we must reject four fifths of all the modern names, in order to do justice to the priority of others. We see no difference, in fact, between these old designations, and many others recently published; for *Cacatua*, *Ara*, and *Maracara* seem to be just as expressive as *Nymphicus*, *Nestor*, *Electus*, and many others of the same description. We should have thought, indeed, that the example set by the illustrious Illiger, no less than the excellent remarks upon nomenclature by Mr. Vigors\*, would have induced our own ornithologists at least, not merely to have rejected such names, but to have excluded them altogether from their systematic writings, however useful they may be thought in the vernacular nomenclature of the Continent. Some allowance, again, ought surely to be made in favour of those ornithologists who patiently work out the details of their group, before they venture to publish a new genus, instead of merely taking what they think to be a new form, and at once publishing it as such; the chances being equal that it is only an aberrant species. Sir James Smith says, and we think very truly, that a botanist (no less than a naturalist) who undertakes to reform and elucidate a whole tribe, ought to be unshackled in

\* Zool. Journ. iii. 117., especially iv. 220. note.

every point in which he can be of service ; he should be allowed to ward off, and to correct from time to time, all that may tend to deform and enfeeble his great object : he will have to choose between names of the same date, "*and even between good and bad ones of any date.*" \* Without in the least presuming to arrogate this authority to ourselves, we still, however, feel bound to make our humble labours subservient to the spirit of these observations ; and in the following Synopsis we have endeavoured to act accordingly. We further trust, that as many of our own generic names are in the rejected list, the purity of our motives in respect to the others will not be doubted, however we may be thought in error as to particular rejections.

(222.) In conclusion, we have used the following abbreviations to designate the chief part of those works we have quoted, the full titles of which have been given in our First Volume.

Lev. Af., or Ois. d' Af.,	}	Le Vaillant's Oiseaux d'Afrique.
or Ois. A. - - -		
Pl. Enl., or P. E.	-	Planches Enluminées.
Pl. Col., or P. C.	-	Planches Colorées.
Wilson, or Wils.	-	Wilson's American Ornithology.
White, Voy.	-	White's Voyage to New South Wales.
Lewin, or Lew.	-	Lewin's Birds of New South Wales.
Selby	-	Illustrations of British Ornithology.
Ill. of Orn., or Ill. O.	}	Jardine and Selby's Illustrations of Ornithology.
Gould's Cent.		
Gould's Monog.	-	Monograph of the Trogonidæ.
Tem. Man., or T. M.	-	Temminck's Manuel d'Ornithologie.
Lesson, Cent.	-	Lesson's Centurie Zoologique.
Z. Miss.	-	Leach's Zoological Miscellany.
Freyc. Voy., or Fr. V.	-	Freycinet's Voyage autour du Monde.
Spix	-	Spix's Avium Species Novæ.
Lin. Tr.	-	Transactions of the Linnæan Society.
Vieil. Gal., or V. G.	-	Vieillot's Galerie des Oiseaux.
Vieil. Am., or O. Am.	-	Hist. Nat. des Oiseaux de l'Amerique.
Ois. Ch.	-	Vieillot's Oiseaux Chanteurs.
N. Z.	-	Northern Zoology, vol. ii.
Zool. Ill., or Z. I.	}	Zoological Illustrations, i. (first series) ii. (second series).

\* Introduction to Botany, 2d ed. p. 383.



*C. aura*. Wilson, 75. 1. (*fig.* 182.) Californianus. P. C. 31.  
*atratus*. Wilson, 75. 2.

NEOPHRON, Savigny. Bill much lengthened, and remarkably slender. Nostrils longitudinal, nearly medial; cere occupying two thirds the length of the bill. Face and part of the neck naked. Tail feathers 14. The tenuirostral type.



*N. percnopterus*. Ois. d' Af. pl. 14. (*fig.* 183.)

CATHETURUS, Sw.\* Bill short, thick, curved almost from the base, but the tip not hooked. Nostrils basal, and membranaceous; the aperture large, round, central, and nearly naked. Head and neck with only a few scattered feathers. Wings short, rounded. Tail broad, of eighteen feathers. Feet strong; anterior scales irregularly hexagonal: toes large; the lateral of equal length, and very little shorter than the middle toe: all the claws long and slender. (*fig.* 92. Vol. I. p. 284.) The rasorial type.

*C. Australis*. Ill. of Orn. pl. 140.

GYPÆTUS, Storr. Bill strong, lengthened: upper mandible elevated near the end, which is hooked; under mandible provided, beneath, with a bunch of setaceous bristles, directed forwards. Nostrils oval, covered and defended by bristles. Feet short: the three anterior toes united to their base by a membrane; the middle toe very long: claws but slightly curved. Wings long; the first quill rather shorter than the second, the third longest. (*fig.* 184.) The fissirostral type.



*T. barbatus*. Edwards, 106. Europe.

#### FAMILY FALCONIDÆ. *The Falcons.*

Size moderate. Head and neck clothed with feathers. Bill curved, more or less, from the base: the tip of

\* The *Alecturus* of Mr. Gray; but this name having been previously given by Vieillot to a very distinct group of flycatchers, which I have retained, it became necessary for me to propose another.

the upper mandible hooked, and very acute, with a tooth, or festoon, towards the end on each side, or with the cutting margin sinuated. Claws considerably curved, retractile, and very acute.

SUBFAM. AQUILINÆ. *Eagles.*

Size large. Body strong, robust, muscular; somewhat heavy. Bill rather straight at the base, but curved towards the end. Wings more or less lengthened; the three first quills graduated. Feet very strong and muscular: the tarsus more or less plumed: the claws large, and much curved.

PANDION, Savigny. Bill rather short, rounded above, curved from the cere: the cutting margin of the upper mandible with a slight festoon in the middle. Nostrils small, obliquely transverse. Wings lengthened; the second quill longest. Legs naked: tarsi entirely covered with small reticulated scales. Toes unconnected; the exterior somewhat versatile. Claws nearly equal, rounded beneath.

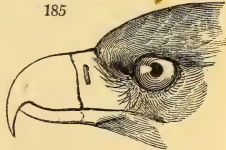
*P. haliaëtus*. \* Sav. Europe. Americanus. Wils. 37. 1.

AQUILA. Wings lengthened (the first quill short, the fourth and the fifth the longest, Tem.). Tarsus plumed almost to the toes. Head not crested. Inhabits chiefly the Old World.

† *A. imperialis*. Tem. Man. 37. pennatus. Tem. Man. 43.  
*chrysætos*. Pl. Enl. 410. albicilla. Selby, i. pl. 3.  
*nævius*. Tem. Man. 43. leucocephalus. Wils. 36.

HARPYIA, Cuvier. Wings rather short. Tarsus more lengthened, and generally naked. Head crested. Inhabits the tropics of both the Old and the New World.

185



\* So far as I can judge from figures and descriptions, I am disposed to consider the genera *Dædalion*, *Hæmatornis*, and some others, to be secondary forms, or subgeneric types. Not having them before me, I have not ventured to adopt them. I wish, in fact, that this arrangement of the *Falconidæ* should be looked upon as merely temporary, being now engaged on a more minute investigation of the whole family.

† These European species are inserted on the authority of the *Manuel d'Ornithologie*, 2d ed.

- H. destructor. P. C. 14. maculosa. Vieil. O. A. 3. bis.  
 (fig. 185.) occipitalis. Ois. d' Af. pl. 2.  
 Guianensis. Daudin. ornatus. Ib. 26.  
 urubitinga. Pl. Col. 55. albescens. Ib. 3.

**GYPOGERANUS**, Illiger. *Secretary*. Legs remarkably long, and formed for walking. Bill shorter than the head, large, strong, hooked, curved nearly from its base, which is covered with a cere. Nostrils rather removed from the base of the bill, lateral; the aperture piercing the cere, diagonal, oblong, and open. Feet very long, slender. Thighs feathered. Tarsus long, more slender at the base than at the upper part. Toes short; the anterior united at their base by a membrane; hind toe articulated at the tarsus. Wings long; the five first quills the longest, and nearly equal. Shoulders armed with an obtuse spine. — (*Temminck, Man.*)

G. serpentarius. Ois. d' Af. 25. South Africa.

*Circaëtus*, Vieillot. Bill robust, rather straight at its base; convex above, compressed on the sides: cutting margin of the upper mandible nearly straight, the tip hooked; under mandible straight, the tip obtuse. Nostrils oval, transverse. Tarsi naked, thick, and lengthened, covered with reticulated scales. Toes rather short; the hinder and the lateral toes nearly equal. Claws rather short, nearly of equal length, and but slightly curved; the anterior and the posterior the strongest. Wings long; the third quill the longest. (*Vieil.*) The rank of this form seems to be sub-generic to the last: M. Vieillot intimates two species.

C. cinereus. Vieil. Gal. pl. 12.

SUBFAM. CYMINDINÆ. *Kites*.

Form slender. Bill rather short, the cutting margin sinuated, but neither toothed nor festooned; the tip very acute, and considerably hooked and lengthened. Feet, (typically) weak, very short; the tarsus not much longer than the hind toe and its claw; soles broad, destitute of pads; lateral toes equal. Wings long; the third and fourth quill longest. Inhabits chiefly America.



**IBYCTER**, Vieillot. Bill feeble, small, very slightly hooked; the cutting margin sinuated, but not festooned: under mandible nearly straight. Orbits, sides of the head, and part of the throat, more or less naked. Wings rather lengthened; the third quill longest. Tail lengthened, rounded; the feathers very broad. Tarsi slender, moderate, naked: lateral toes unequal; the hinder toe much shorter than the inner toe. America only. (*fig.* 186.)



186



b

*I. leucogaster.* Vieil. Gal. 6. (a) ater. (b) Vieil. Gal. 5.

**POLYBORUS**, Vieil. Form aquiline: size moderate. Bill with the base rather straight. Nostrils oval, obliquely transverse. Orbits and face partially naked. Tarsi rather lengthened, naked, very slender. Toes slender; the middle much lengthened, the outer rather shorter than the inner, and the hinder toe much the shortest. Claws but slightly curved. Tail moderate, broad. (*fig.* 187.)



187

*P. Braziliensis.* Zool. Ill. ii. pl. 1.

**CYMINDIS**, Cuvier. Bill high, the sides much compressed, with the hook considerably lengthened; the cutting margin irregularly sinuated, or nearly straight; under mandible small and weak. Sides of the head and orbits partially naked. Nostrils obliquely transverse, opening by a slit. Tarsi very short, not exceeding the hind toe and claw; the anterior part plumed half way from the knee. Toes broad, with fleshy margins; the two lateral exactly equal; the middle slightly longer, the hinder slightly shorter, than the inner toe. The claws nearly equal, except the exterior, which is smallest. Soles of the feet very broad, and without prominent pads. Wings long; the fourth quill the longest.

*C. cuculoides.* Pl. Col. 103, 104.

**NAUCLERUS**, Vigors. Bill small, weak, considerably hooked, with a small and nearly obsolete festoon in the middle. Orbits and sides of the head thinly provided with feathers. Wings very long; the first and second quill internally emarginate towards the tip. Tail very long and deeply forked. Tarsi very short, not longer than the hind toe and claw; plumed half way in front, the remaining portion covered with angulated scales. Toes short; the two lateral almost equal, the hinder nearly equal to the inner. Claws grooved beneath.

*N. furcatus*. Wils. 51. 2. *Africanus*. Vieil. Gal. pl. 85.

**Elanus**, Savigny. Bill small, much compressed, the cutting margins slightly sinuated; the tip of the upper mandible very much hooked and prolonged; the cere short; nostrils large, oval. Wings very long, acuminate, reaching beyond the tail; the second quill longest; the first emarginated near the tip of the inner web. Tail short, almost even. Feet short, thick: the tarsus half feathered; the lower part covered with minute roundish subequal scales. Toes thick and free; the outer toe much shorter than the inner, and of equal length to the hinder toe. Claws large; the lateral and the hinder ones smooth and round; the middle claw sharply carinated on its inner side.

*E. melanopterus*. Le Vail. Af. 36, 37.

**Gampsonyx**, Vigors. General structure of *Elanus*, but the wings are shorter, and the tail longer. Tarsus more lengthened, and less plumed in front. Tail even. Outer toe shorter than the inner. Claws slender, nearly cylindrical. (*fig.* 188.)



*G. Swainsonii*. Zool. Journ. i. 65.

SUBFAM. BUTEONINÆ. *Buzzards*.

Size moderate: form slender. Bill small, slightly festooned, the base broad, the cere occupying one third the length of the bill. Head depressed and unusually broad.

Feet moderate: the hinder toe much the shortest. Wings long. Hunt for their prey upon the wing.

**MILVUS**, Antiquorum. Bill small: nostrils elliptic. Wings much lengthened; the fourth quill longest. Tarsi short, slender. Tail lengthened, either forked or graduated. Claws robust. Fissirostral.

*M. regalis*. Vieil. Pl. Enl. 422. *parasiticus*. Ois. d' Af. 22.  
*ætolius*. Pl. Enl. 472. *sphenurus*. Vieil. G. 15.

**PERNIS**, Cuvier. *Honey Buzzard*. Bill curved from the base; the margin straight, the lores clothed with small scale-like feathers. Tarsi very short, covered with small reticulated scales, and half plumed in front. Toes protected above by transverse scales. Wings and tail long. Tenuirostral.

*P. apivorus*. Pl. Enl. 420.

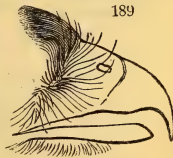
**SPIZAËTUS**, Vieil. Form aquiline, with the bill of a buzzard. Bill strong, high, curved from the base, with a prominent festoon. Orbits and lores covered with down and hairs. Wings short. Tarsi moderate, feathered. Inner toe, without the claw, shorter than than the outer. Rasorial.

*S. cristatellus*. Ill. of Orn. pl. 66.

**BUTEO**, Antiquorum. Head large, depressed: gape wide, extending under the orbits. Nostrils large, oval. Lores densely clothed with small compact feathers. Bill small, with a very slight festoon, or none. Feet moderate. Hind toe very short; lateral toes unequal. Anterior and posterior scales broad, transverse; lateral scales small, roundish. Wings long. Tail rounded.

*B. lagopus*. N. Z. pl. 28. *vulgaris*. N. Z. pl. 27.

**CIRCUS**, Bechstein. *Harrier*. Bill weak, particularly high at the base, and greatly compressed throughout, with a slight festoon in the middle of the margin. Cere very large, nearly covering one half of the bill. Lores clothed with small feathers, and lengthened recurved bristles. Gape



very wide. Ears large, surrounded by a ruff of small thick-set feathers. Tarsi very long, slender, smooth. (*fig. 189.*)

*C. pygargus.* Selby, pl. 10. E. *rutilans.* Pl. Col. 25. 3.  
*Montagui.* Vieil. G. 13. E.

SUBFAM. FALCONINÆ. *Falcons.*

Bill short, suddenly curved from the base. The upper mandible armed near the tip with a sharp angulated tooth, often double, beyond which is a slight festoon; under mandible deeply toothed at the end. Nostrils circular; cere short. Feet moderate; tarsi slender, naked; middle toe very long, lateral either equal or unequal, hinder very short. Wings lengthened, pointed; the second quill longest, and, with the first, deeply notched internally, near their tips. Tail rounded.

*FALCO,* Auct. *True Falcons.* Both mandibles of the bill with a single acute tooth near the tip. Nostrils round, naked. Wings moderate or long, pointed; the first quill rather shorter than the second, which, with the third, are the longest. Tarsi slender, naked, with two series of anterior scales fitting into each other; the rest reticulate. Middle toe very long, equal to the tarsus; lateral toes rather unequal;



hinder very short. The anterior claws of almost equal size. Soles with prominent pads. (*fig. 190.*)

<i>F. lanarius.</i> Tem. Man. i. 20.	<i>unicolor.</i> W. Af. i. pl. 3.
<i>peregrinus.</i> Pl. Enl. 421.	<i>rufescens.</i> W. Af. i. 109.
<i>subbuteo.</i> Pl. Enl. 432.	<i>ruficollis.</i> W. Af. i. pl. 2.
<i>Æsalon.</i> N. Z. pl. 25.	<i>rupicolus.</i> O. d' Af. pl. 35.
<i>tinnunculus.</i> Pl. Enl. 401.	<i>tibialis.</i> Pl. Col. pl. 29.
<i>tinnunculoides.</i> T. M. i. 31.	<i>punctatus.</i> Ib. 45.
<i>rufipes.</i> Pl. Enl. 431.	<i>frontalis.</i> O. d' Af. pl. 28.
<i>sparverius.</i> N. Z. pl. 24.	<i>macrodactylus.</i> Ois. d' Af.
<i>columbarius.</i> W. pl. 15. 3.	pl. 30.
<i>femoralis.</i> Pl. Col. 345.	and those in Part 5.

**HARPAGUS**, Vigors. Bill thickened; the upper mandible with two distinct teeth. Nostrils oval. Wings moderate, rounded; the first and second quills graduated, the third and fourth the longest. Tarsi slender; anterior scales transverse, in a single row; posterior much smaller, rounded, sub-reticulated: middle toe as long as the tarsus; lateral toes unequal, the outer longest, posterior very short. Three anterior claws nearly equal, hinder strongest. (*fig.* 191.)



*H. rufipes*. P. C. 38.228. *cœrulescens*. Edwards, 108.  
*diodon*. P. Col. 198.

**LOPHOTES**, Lesson. Bill small, much hooked, furnished on its sides with a groove: lores thickly clothed with feathers: the upper mandible with two small teeth. Feet very short. Tarsi plumed above, naked beyond, and furnished with smooth hexagonal scales; the (anterior) toes of almost equal length: claws very small, nearly all of the same size. Head crested. (*Vide Temminck, Pl. Col. 10.*)\* (*fig.* 192.)



*L. Indicus*. Pl. Col. 10. India.

**AVICEDA**, Swain. (*fig.* 193.) Bill falconine; upper mandible with two, lower with one, small angular teeth. Nostrils transverse. Wings lengthened; the fourth quill the longest, the third slightly shorter; the first, second, and third, emarginate at their internal base. Feet very short. Tarsi not longer



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\* It is singular that M. Temminck should take no notice, in his description, of the double tooth of this remarkable bird, although it is so distinctly expressed in his figure, Pl. Col. 10.; neither does he say any thing as to the length of the wings: the tail he describes as even, while Lesson asserts it to be "*un peu échancrée!*"

than the hind toe and claw, plumed half-way from the knees ; the scales irregularly hexagonal. Middle toe very long, exceeding the tarsus, even without including its claw ; lateral toes nearly equal, the external shortest ; external and posterior toes equal. Sole of the foot very broad, flattened, and without pads ; all the toes free. Tail broad, moderate, even. Claws slender, moderate.

*A. cuculoïdes.* West. Af. 1. pl. 1.

SUBFAM. ACCIPITRINÆ. *Hawks.*

Bill short, suddenly curved from the base ; the upper mandible armed in the middle of the margin with a large, obtuse, rounded tooth, or festoon ; under mandible truncate at the tip ; cere moderate. Feet moderate ; tarsi in general smooth, naked. Middle toe lengthened ; hinder not much shorter than the inner. Anterior claws very unequal, the inner being almost twice the size of the outer, and nearly as strong as the hinder. Head small. Wings short ; the quills internally emarginate at their base. Tail rounded.

*ICTINIA*, Vieillot. Bill small, thick ; a small, angulated, toothlike festoon towards the end of the cutting margin of the upper mandible ; cere small. Nostrils round. Feet very short. Tarsi not much longer than the hind toe and claw : anterior scales large, transverse ; lateral and posterior scales sub-hexagonal, the latter very minute. Base of the tarsi and toes covered with very small reticulate scales. Toes short, strong, broad, lateral, unequal, the inner and hinder almost of the same length. Wings very long ; the third and fourth quills the longest. Tail short, even. (*fig.* 194.)



*I ophiophaga.* Wil. 25. 1. plumbea. Vieil. Am. pl. 10.

*ACCIPITER*, Willughby. *Sparrow Hawks.* Size small. Form slender. Nostrils oval, oblique. Bill much compressed ; the festoon in the middle of the cutting

margin very prominent. Wings short, rounded; the fourth and fifth quills nearly equal, and longest. Feet lengthened, very slender. Tarsi long; the anterior and posterior scales remarkably smooth, with their divisions scarcely perceptible. Toes long, slender, with prominent pads beneath; inner toe considerably shorter than the outer; hinder toe shorter than the inner. Tail moderate, rounded, or even.

- A. fringillarius. P. E. 412. 467. erythrorynchus. O. d' Af. i.  
 pennsylvanicus. Wils. 46 1. pl. 83.  
 brachydactylus. W. Af. i. 118. sexfasciatus. Part 5. No. 4.

**ASTER, Auct. Goshawks.** Size large. Form robust.

Nostrils large, oval, obliquely longitudinal. Bill short, the festoon prominent; lores thickly clothed with minute feathers. Wings short, often not reaching beyond the middle of the tail; the fourth and fifth quill nearly equal, and longest. Feet strong, moderate in length and size. Tarsi feathered beyond the knees, short, broad, transverse, and smooth; the divisions prominent: posterior scales the same; but those towards the knee joint, and the lateral scales, are small and reticulate. Lateral toes unequal, the posterior shortest. Hinder and inner claws nearly equal, and particularly large; middle and outer claws half the length of the former, and nearly equal. (*fig. 195.*)



195

- A. palumbarius. N. Z. ii. pl. 26. monogrammicus. W. Af. i.  
 ? borealis. Wilson, 52. 1. pl. 4.  
 albus. White, Voy. 35. musicus. O. d' Af. i. pl. 27.

**Haliaeetus, Savigny. Fish**

196

**Hawks.** Size and form intermediate between *Aster* and *Aquila*. Bill large, straight where covered by the cere, strongly curved and hooked beyond. Margin with a slight festoon in the middle. Cere rather large, occupying nearly one third the



length of the bill. Nostrils oval, obliquely transverse. Wings lengthened; the third quill longest. Feet rather short. Tarsi slender, feathered beyond the knees; the front and back smooth. Anterior scales transverse; posterior as if in one entire piece; lateral scales, and those at the base of the toes, very small and indistinctly reticulate. Toes strong; *inner* toe the shortest of all. Claws grooved beneath, unequal; hinder and inner nearly of the same size, outermost much smaller than the middle. Tail broad, rounded. (*fig.* 196.)

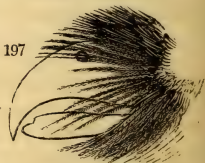
H. Pondicerianus. Pl. Enl. 416.

*Note.*—How far the other species, placed in this group by authors, agree with the above definition, cannot be ascertained. I have, therefore, taken the characters entirely from this one species, which seems to have an equal, and perhaps a greater, claim to a station in the genus *Pandion*.

#### FAMILY STRIGIDÆ. *Owls.*

Head very large. Eyes surrounded with a circle of radiated feathers, forming a facial disk; plumage soft, lax. Ears large. Feet generally feathered to the toes; outer toe directed outwards. Bill more or less short, thickly protected by basal bristles: upper mandible entire, lower notched. Feed and fly during night.

STRIX, Linn. *Typical Owls.* Head and facial disk very large: the former generally without egrets; the latter complete, and margined by a border of narrow stiff feathers. Ears very large; the conch protected by an operculum or lid. Feet moderately long, scantily feathered.



*Strix.* Head enormous, wider than the body, without egrets. Bill somewhat lengthened, and straight at the base. Tarsi rather long. The middle claw serrated. Ears and operculum very large.

*S. flammea.* Selby, Pl. 124. *badia.* Horsf. Java.

*Scotiapterx,* Sw. Head smaller, without egrets. Oper-



culum of the ears large, and covering the orifice. Tarsus short, and thickly feathered. Tail graduated, considerably lengthened.

*H. cinerea*. N. Z. pl. 31. *Uralensis*. Pl. Col. 27.

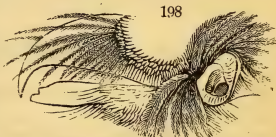
*Scotophilus*, Sw. Operculum of the ears very small. Head without egrets. Tarsus short, feathered to the claws. Wings and tail rounded.

*S. Tengmalmi*. N. Z. pl. 32. *Acadica*. Wils. iv. pl. 34. 2.

*Otus*, Ant. Head smaller than the circumference of the body, and having short egrets. Wings long; the second quill longest. Ears large, operculated. Feet moderate.

*O. Europæus*. Selby, pl. 120. *brachyotos*. Wils. iv. pl. 33. 3.

ASIO, Antiq. *Horned Owls*. Head large, furnished with a double crest or egrets. Ears and facial disk moderate, and the latter not always perfect. Ears without an operculum. Bill short, with the upper mandible sometimes festooned. (fig. 198.)



*A. bubo*. Pl. Enl. 435. *Virginiana*. Wils. vi. pl. 50. 1.

*Heliaptex*, Sw. Habits diurnal. Head small. Facial disk almost obsolete. Ears very small. Tail moderate. Feet feathered to the toes.

*H. arcticus*, N. Z. pl. 32.

*Scops*, Antiq. *Scops Owls*. Size very small. Facial disk very imperfect. Wings long. Middle and inner toe nearly equal. Tarsus moderate.

*S. Zorca*. Pl. Enl. 436. *Senegalensis*. W. Af. i. 127.

*leucotis* W. Af. ii. 124. *rufescens?* Horsf. Lin. Tr.

Pl. Col. 16. xiii. 140.

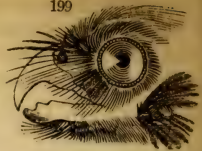
NYCTIA, Savigny. *Eagle Owls*. Size large. Head small, without egrets, and almost without the facial disk. Eyebrows prominent. Ears very small. Tarsi short, thickly feathered. Tail short. Wings rather long.

*N. candida*. Wils. iv. pl. 32. 1.

NYCTIPETES, Sw. *Sparrow Owls.*

199

Size very small. Facial disk obsolete. Ears very small. Wings very short, rounded. Tail moderate, rounded. Tarsi of variable length. Middle toe lengthened. (*fig. 199.*)



\* *N. perlatus.* W. Af. i. 130. † *cunicularia.* Bon. Am. O. pl. 1.

SURNIA, Dumeril. *Hawk Owls.* Size large. Head and ears small. Facial disk imperfect. Wings long. Tail considerably lengthened, cuneated, or graduated. Flight diurnal.

*S. funeria.* Wils. vi. pl. 50. f. 6.

## ORDER II. INSESSORES. *Perching Birds.*

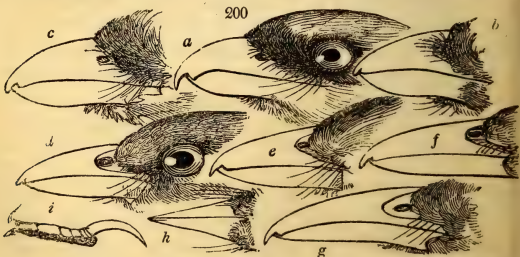
### TRIBE DENTIROSTRES.

#### FAMILY LANIADÆ. *Shrikes.*

Bill with a very deep notch, or prominent tooth, at the tip of the upper mandible. Claws acute.

#### SUBFAM. LANIANÆ. *True Shrikes.*

Lateral toes equal and free. Claws slender, acute. Bill generally short, with the tooth very prominent.



LANIUS, Linn. Bill very short, strongly hooked; the

\* Erroneously named a *Scolophilus.*

† Probably the type of the whole.

tooth very prominent. Wings moderate, somewhat pointed. Tail rounded, or slightly graduated. Lateral toes free, and equal. Claws (*fig.* 200. *i*) acute.

*L. excubitor.* P. E. 445. (*a, h*) *collurio.* P. E. 32. f. 2.  
*excubitoides.* N. Z. ii. pl. 34. *collaris.* O. d' Af. i. pl. 61.  
*borealis.* N. Z. pl. 33. *flavirostris.* W. Af. i. 233. (*c*)  
*elegans.* N. Z. p. 122. *Hardwickii.* Gould's Cent.  
*meridionalis.* P. E. 32. f. 1. pl. 12.  
*rufus.* P. E. 9. f. 1. *superciliosus.* Ib. pl. 12.

**TELOPHONUS**, Sw. Bill more lengthened, slightly hooked; the tooth smaller. Wings very short and rounded. Tail lengthened, graduated. Lateral toes free; the inner very slightly shorter than the outer.

*leucogrammicus.* (*fig.* 200. *d*) *longirostris.* Part 3. No. 6. (*g*)  
*erythropterus.* Ois. d' Af. *collaris.* O. d' Af. ii. pl. 67. (*f*)  
 pl. 70. (*e*)

**CHÆTOBLEMMA**, Sw. (*fig.* 201.) Bill short; the tip

merely curved, and the tooth obsolete. Front defended by thick-set bristly feathers, directed forwards. Wings lengthened; the third quill the longest. Feet short, robust. Middle

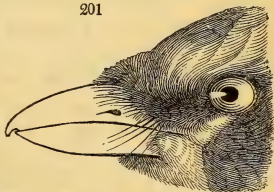
and hinder toe of the same length; lateral toes free, nearly equal. The fissirostral? type. Analogous to *Tephrodornis*.

*L. leucocephala.* Sw. Part. 3. No. 5.

**NILAUS**, Sw. Bill lengthened, slender, with a prominent hook and tooth. Wings moderate; the fourth and fifth quill longest. Tail short, and nearly even; the feathers narrow and obtuse. Tarsi moderate, slender. Inner toe shorter than the outer. Tenuirostral?

*N. capensis.* Ois. d' Af. ii. pl. 71. (*fig.* 121. p. 13.)

**FALCUNCULUS**, Vieil. Bill very short and broad; the hook slight, and the tooth small. Wings moderate. Tail divaricated, or slightly forked. Feet semi-scansorial; the hind toe lengthened, and longer than



the middle toe. Claws broad, curved. The scansorial type.

*F. frontalis*. Lewin. pl. 26. *guianensis*. Braz. B. 58.  
Australia. S. America. (*fig.* 200. *b*)

SUBFAM. THAMNOPHILINÆ. *Bush Shrikes.*

Lateral toes unequal; the outer connected to the first joint of the middle toe. Claws broad, and not very acute. Bill lengthened, abruptly hooked at its tip; the tooth prominent.

**THAMNOPHILUS**, Vieil. Bill strong, abruptly hooked; the gonyes ascending. Wings very short and rounded; the four first quills graduated. Tarsus rather long; the lateral scales more or less divided. Inner toe considerably shorter than the outer, and deeply cleft: outer toe connected to the middle as far as the first joint. Tropical America only. Colours dark.

*T. gigas*.\* Fr. V. pl. 18, 19. *niger*. Less. Cent. pl. 19.  
*guttatus*. Spix, ii pl. 35. 1. *cinnamomeus*. Zool. J. ii. 87.  
*doliatus*. Z. Miss. i. 16. *torquatus*. Ib. p. 89.  
*lineatus*. Ib. i. pl. 6. *ambiguus*. Ib. p. 91.  
*bicolor*. Braz. Birds, pl. 60. *pileatus*. Ib. p. 91.  
*nævius*. Ib. pl. 59. *ferrugineus*. Ib. p. 92.  
*badius*. Ib. pl. 65, 66. *pectoralis*. Part 5. No. 7.

**MALACONOTUS**, Sw. Bill strong, abruptly hooked; the gonyes ascending. Wings moderate or short, rounded; the three first quills graduated. Tarsi rather long; the lateral scales in an entire piece. The toes as in *Thamnophilus*. Tail slightly rounded. Tropical Africa only. Colours bright.

*M. olivaceus*. W. Af. i. pl. 22. *atrococcineus*. Z. J. ii. pl. 76.  
*cruentus*. Less. Cent. p. 65. *torquatus*. O. d' Af. pl. 286.  
*superciliosus*. W. Af. 239. *erythrogaster*. Rüpp. At. 29.  
*barbarus*. Ib. pl. 24. *mollissimus*. W. Af. i. pl. 23.  
*chrysogaster*. Ib. pl. 25. *rufiventris*. O. d' Af. ii. pl. 68.  
*leucotis*. Part 5. No. 178. *orientalis*. Part 5. No. 179.

**PRIONOPS**, Vieillot. Bill more slender; the base, and front of the head, defended by long setaceous feathers,

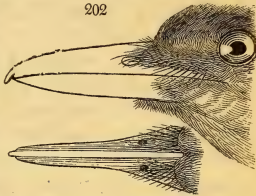
\* *Striatus*, if retained to this species, gives an erroneous idea of the markings, which are not stripes, but bands. The subgenera are not yet determined.

directed forwards, and hiding the nostrils. Wings long, ample, and rounded; the four first quills graduated. Feet slender, feeble. Lateral scales entire. Tarsus rather short. Middle toe not much longer than the outer, which is again longer than the inner; hind toe lengthened. Tail rounded.

*P. plumatus*. West. Af. pl. 26.

**COLLURICINCLA**, Vigors. (*fig. 202.*) Bill much compressed, and the tip not so abruptly hooked. Nostrils partially covered with setaceous feathers and bristles. Wings rather lengthened, and pointed; the first quill only half as long as the second; the three next nearly equal, and longest. Tail moderate, even. Feet strong: the lateral toes unequal; the outer longest, and slightly connected to the middle. Claws acute. Lateral scales entire. Australia only. Tenuirostral.

202



*C. cinerea*. Lin. Tr. xv. p. 214. *strigata*. Part 3. No. 8.

SUBFAM. DICRURINÆ. *Drongo Shrikes.*

Bill compressed towards the end; the culmen gradually arched, and bent over the lower mandible. Feet short. Tail lengthened, generally forked. Wings long, and more or less pointed. Inhabits the warm latitudes of the Old World.

**TEPHRODORNIS**, Sw. (*fig. 3. p. 8.*) Bill resembling *Prionops*; the base and the nostrils being partially covered with procumbent setaceous feathers and bristles. Wings moderate, rounded. Tail rather short, perfectly even. Tarsi and toes short; the lateral toes unequal; hinder toe longer than the tarsus.

*T. superciliosus*. Part 3. No. 9. *virgatus*. P. C. 256. f. 1.

**MELASOMA**, Sw. (*fig. 204. d*) Bill of the general shape of *Dicrurus*, but much more slender and delicate.

Nostrils partially naked, with a few weak incumbent bristles at the base. Rictus strongly bristled. Wings moderate; the three first quills graduated, the three next of equal length. Tail rounded. Tarsus lengthened; equal with the middle toe, and longer than the hind one. Inner toe scarcely shorter than the outer. Africa. Allied also to *Brachypus*.

*M. edolioides*. West. Af. i. pl. 29.

*Ocypterus*, Cuvier. (*fig. 204. b, e*) Bill gradually arched from the base, where it is very broad. Culmen thick and convex, without any ridge; the base dividing the frontal feathers, and somewhat dilated. Rictus bristled. Nostrils wide apart, naked, small, without a membrane, and pierced in the bill. Feet short, strong. Wings very long and pointed; the first quill longest. Tail short. India and Australia.

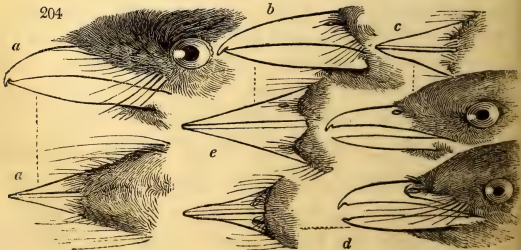
*O. leucorynchus*. Pl. Enl. 9. f. 1.

*Analcipus*, Sw. (*fig. 203.*) Bill with the general structure of *Ocypterus*, but more conic. Rictus smooth. Wings lengthened, nearly as long as the tail; the first quill spurious; the second much shorter than the third, fourth, or fifth, which are equal and longest. Tail short, even. Feet short, weak. Hinder toe shorter than the tarsus. India and South Africa.

*A. sanguinolentus*. Pl. Col.

bicolor. O. d' Af. pl. 73.

*hirundinaceus*. Part 5. No. 11.



**DICRURUS**, Vieillot. (*fig. 204. a*) Bill wide at the base, much compressed beyond; the culmen considerably arched, and curved at the tip; base of the bill, and the nostrils, hid by incumbent rigid feathers and strong bristles. Wings long, pointed, but with the three first quills graduated. Tail long, forked, and generally lyrate. Feet very short. Hinder toe and claw as long as the middle one, and equal to the tarsus.

*D. cinereus*. O. d' Af. pl. 170. *atripennis*. W. Af. i. 256.  
*canipennis*. W. Af. i. 254.

SUBFAM. CEBLEPYRINÆ. *Caterpillar-Catchers*.

Bill broad at the base, but destitute of long bristles. Rictus nearly smooth. Wings pointed; the three first quills graduated. Feathers on the rump very thick, and apparently spinous. Tail with the centre emarginate, and the sides rounded. Feet short; lateral toes unequal. Warm latitudes of the Old World.

**CEBLEPYRIS**, Cuv. (*fig. 115. p. 6.*) Bill strong; the culmen considerably arched. The nostrils concealed by very short, compact, incumbent, and somewhat rigid feathers. Rictus with a few short bristles. Wings with the fourth quill longest. Lateral toes unequal. Tarsus longer than the hinder toe. Colours plain.

*C. mentalis*. H. and V. Lin. Tr. xv. *pectoralis*. W. Af. i. 249.

**OXYNOTUS**, Sw. Bill strong; the base broad; the culmen elevated and arched; the tip considerably hooked; both mandibles notched; front defended by rigid diverging feathers. Rictus strongly bristled. Feathers of the head thickly interspersed with setaceous hairs. Wings and tail rounded. Feathers on the back very rigid. Tarsi strong. The claws large and curved.\*

*O. ferrugineus*. Freyc. Voy. Atlas, pl. 17.

**CAMPEPHAGA**, Vieillot. (*fig. 204. c*) General structure of *Ceblepyris*, but smaller and weaker. Bill sur-

\* I am not without suspicion that this may prove to be a *Lanius*, in the disguise of a *Ceblepyris*. The only specimen I have ever seen is in Paris. I cannot, therefore, at this time, re-examine it.

rounded with setaceous hairs. Rictus bristled. Wings short, not reaching much beyond the tail covers; the two first quills equally graduated. Rump feathers very thick and spinous. Tail very broad slightly rounded. Feet short, weak. Colours bright.

*C. phœnicia*. W. Af. i. pl. 27, 28. *atrata*. O. d' Af. pl. 164-5.

*Phœnicornis*, Sw. General structure of *Campephaga*, but the nostrils and gape are entirely destitute of bristles or setaceous feathers. Rump feathers nearly of ordinary softness. Wings moderate; the first quill spurious, and not half so long as the second; the third and fourth longest. Feet short, weak. Tail lengthened, nearly even; the feathers narrow.

*P. flammeus*. Zool. Ill. ii. *miniata*. Gould's Cent. pl. 8. pl. 52. *peregrinus*, Ib. pl. 9.

*ERUCIVORA*, Sw. General structure of *Campephaga*, but the bill is more lengthened and compressed from the middle. Front and rictus entirely smooth. Wings moderate; the fourth and fifth quills longest. Tail broad, rounded. Rump feathers not rigid. Tarsus slender, lengthened, as long as the middle toe.\* Upper tail covers very long.

*E. orientalis*. (*Turdus orientalis*, Auct.)

SUBFAM. TYRANNINÆ. *Tyrant Shrikes*.

Bill very straight, short, depressed its whole length; the culmen not arched, but the tip abruptly hooked. Nostrils and rictus defended by bristles. Feet short, small, and slender. Lateral toes equal, or very nearly so. Claws long, slender, fully curved, and very acute. America only.

*PTILOGONYX*, Sw. Habit of *Phœnicornis*, but the rump feathers quite soft. Bill very short, rather strong, triangular; the base compressed; the culmen gently arched. Rictus smooth. Nostrils large, membran-

\* In all the other *Ceblepyrinæ* the tarsus is shorter than the middle toe.



aceous ; the aperture naked, and nearly round. Feet very short, strong. Legs feathered below the knees. Wings moderate ; the first quill spurious, the two next graduated. Tail lengthened, and slightly forked.

*P. cinereus*. Z. I. ii. pl. 62. 120. nitens. Part 5. No. 16.

**CHRYSOLOPHUS**, Sw. *Walking Tyrants*. Bill lengthened, as long as the head ; the sides compressed. Rictus bristled. Wings rounded ; the two first quills gradually pointed at their ends ; tertials lengthened, nearly as long as the primaries. Feet large, formed for walking. Lateral toes equal. Tail even. Brazil.

*C. ambulans*. Spix, ii. pl. 23.

**SAUROPHAGUS**, Sw. Bill lengthened ; the sides compressed ; the tip abruptly hooked, and deeply notched. Gonys thick, ascending. Wings moderate. Feet moderate, stout. Lateral toes equal.

*S. sulphuratus*. Pl. Enl. 269. pusillus. Part 5. No. 12.

*Megastoma*, Sw. Habit and general structure of *Saurophagus* ; but the bill is very large, and broad along its whole length. Inner toe shorter than the outer.

*M. flaviceps*, *ruficeps*, and *atriceps*. Part 5. No. 13, 14, 15.

**TYRANNUS**, Vieillot. *Typical Tyrants*. Size large. Bill of different sizes, but always broad and depressed. Wings rather long ; the primaries abruptly sinuated, and pointed at their tips. Feet small, and generally feeble ; the inner toe shortest. The claws slender, strong, very acute, and fully curved. Tail moderate, broad, more or less forked.

*T. intrepidus*. Wilson, pl. 13. f. 1.

*Mitvulus*, Sw. Tail considerably lengthened, and very deeply forked.

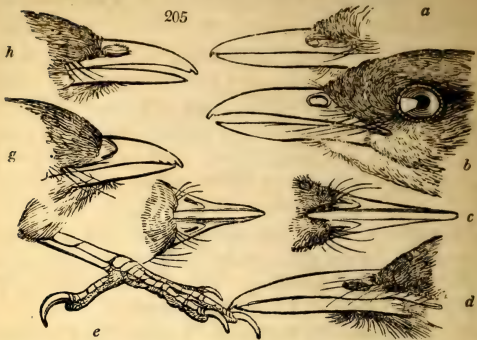
*M. forficatus*. Pl. Enl. 677. longipennis. Ill. O. i. pl. 42.

**TYRANNULA**, Sw. *Little Tyrants*. Size, in general, small. Habit and general structure of *Tyrannus*, but the tail is never forked, nor the primary quills abruptly sinuated or pointed at their tips.\*

\* The subgenera of the last, and more particularly of this group, which

*T. audax*. Sw. Monog. No. 3. *crinita*. Wils. pl. 18. f. 3.  
*borealis*. N. Z. ii. pl. 35. *sibilans*, &c.

FAMILY MERULIDÆ. *Thrushes*.



SUBFAM. BRACHYPODINÆ. *Short-footed Thrushes*.

Feet very short. The hind toe almost as long as the tarsus. Claws short, broad, and much curved. Bill distinctly notched. Wings short, rounded. Feathers on the rump very long and thick set. (*fig. 205.*)

*MICROPUS*, Sw. (*fig. 205. c, d*) Bill as long as the head, straight, somewhat conic, but the culmen gradually arched. Tarsus remarkably short, feathered beyond the knees. (*fig. 206. c*) Lateral toes unequal; hinder as long as the tarsus. Wings moderate; the first quill almost spurious. Tail even.

*M. calcocephalus*. Pl. Col. 433. — *melanoleucus*.\*

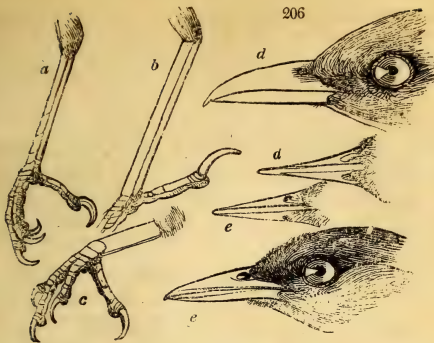
*Hypsepetes*. Vigors. Tail forked.

*P. psaroides*. Gould's Cent.

*BRACHYPUS*, Sw. Bill shorter than the head; the base broad; the sides compressed: culmen elevated, and curved from the base. Rictus generally furnished

is very numerous in species, have not yet been sufficiently analysed. There are many remarkable modifications of structure; but all, as I believe of a subordinate nature.

\* *Turdus melanoleucus* Gray.



with bristles. Feet very short, strong: tarsal scales entire. Tarsus longer than the hind toe. (*fig. 205. e*) Claws curved, broad, acute. Wings and tail rounded.

*Brachypus*, Sw. Bill short. Rictus bristled. Feet small, weak: lateral toes equal; hinder toe as long as the tarsus. (*fig. 208. a*)

*B. dispar*. Pl. Col. 137.

*Chloropsis*, Jardine and Selby. (*fig. 206. d*) Bill more lengthened; the tip much hooked; the notch of the upper mandible forming a small distinct tooth. Rictus or gape smooth. Feet small: lateral toes unequal; the hinder toe rather shorter than the tarsus.

*C. Malabaricus*. P. C. 512. f. 2. *gampsorynchus*. Ill. O. pl. 7.  
*Cochinsinensis*. P. C. 484. 2. *cyanopogon*. P. C. 512. f. 1.  
*aurifrons*. P. C. 484. f. 1. *mysticalis*. Part 3. No. 48.  
*Sonnerati*. Ill. Orn. pl. 100.

*Jora*, Horsfield. (*fig. 206. a, e*) Bill nearly as long as the head, lengthened, somewhat conic, and rounded. Rictus smooth. Tarsus rather lengthened; the anterior scales divided. Middle and hinder toe of equal length. Tarsus much longer than either. Tail very short, fasciculated; the tips truncate and even.

*J. scapularis*. Horsf. Java. *melaceps*. O. d' Af. pl. 141.

*Andropadus*, Sw. (*fig. 205. f, g*) Bill very short, resembling

that of *Brachypus*, but the upper mandible is crenated near the tip. Neck with setaceous hairs. Rictus bristled. Wings, tail, and feet as in *Brachypus*.

A. vociferus. O. d' Af. 106. f. 2.

*Hæmatornis*, Sw. (fig. 205. h) Head crested. Bill short. Rictus bristled. Feet short; lateral toes unequal; hinder toe shorter than the tarsus, which is equal to the middle toe. Wings and tail rounded.

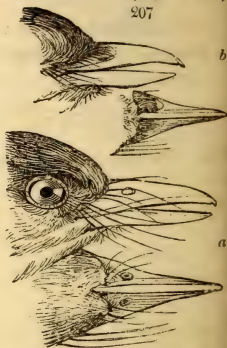
H. chrysorrhœus. O. d' Af. iii. bimaculatus. Linn. Tr. xiii. pl. 107. 2. p. 147.

melanocephalus. Ib. 106. 1. erythrotis. Dixon's Voy.

hæmorrhous. O. d' Af. 107. 1. Pl. Enl. 508.

**TRICOPHORUS**, Temminck. *Bristle-neck*. (fig. 207.)

Culmen gradually arched. Nostrils and base of the bill surrounded with lengthened slender hairs. Gape very strongly bristled. Margins of the mandibles white. Feathers of the crown and chin elongated. Nape of the neck furnished with several conspicuous lengthened bristles, very considerably exceeding the surrounding feathers. Feet short. Tarsus longer than the hind toe, and feathered beyond the knees. Inner toe shortest. Wings and tail moderate; the former with the three first quills much graduated.



T. olivaceus. W. Af. i. 264. (b) strigilatus. W. Af. i. 267. gularis. Ib. i. 266. (a)

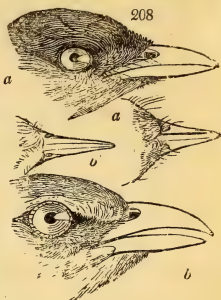
**PHYLLASTREPHUS**, Sw. (fig. 205. a, b) Bill as long as the head, strong, the tip rather hooked. Rictus strongly bristled. Frontal feathers small, compact, directed forwards, and compressed on the base of the bill. Wings and tail moderate, rounded. Feet short, strong, robust. Tarsus and middle toe of the same

length; lateral toes unequal, the inner shortest: hinder toe shorter than the inner one. Anterior tarsal scales, divided.

*P. capensis*. O. d' Af. 112. f. 1. *scandens*. W. Af. i. pl. 30.

**ICTERIA**, Viell. Bill with the general form of *Brachypus*, but the culmen more elevated and arched, and both mandibles entire. Wings and tail rounded. Tarsus considerably lengthened and strong. Inner toe the shortest; middle toe very long. America. (fig. 206. b. 208. b)

*Icteria polyglotta*. Wilson, pl. 6. f. 2.



SUBFAM. MYOTHERINÆ. *Ant Thrushes.*

Bill straight, somewhat cylindrical; the tip suddenly bent down or hooked.

**DASYCEPHALA**, Sw. Bill as long as the head, straight; the tip abruptly hooked, the base wide, the rest somewhat cylindrical. Gonys strong, ascending. Nostrils and front of the head defended by rigid feathers and bristles, pointing in different directions. Rictus strongly bristled. Tarsus lengthened, slender: lateral scales numerous, small, oval. Toes and claws slender: inner toe shortest; outer toe connected to the middle as far as the first joint. Hind claw large. Wings and tail rounded.

*D. rufescens*. Braz. B. pl. 76. *syndactyla*. W. Af. i. 261.

**MYOTHERA**, Illiger. Feet lengthened, rather stout. The lateral scales of the tarsus in one entire piece. Claws not broad, nor greatly curved. Bill as in the small *Thamnophilæ*. Wings short. Tail moderate, rounded.\*

\* *Urotomus*, *Formicivora*, and all the other small *Myotheræ*, having the feet weak, and the tarsal scales and claws similar to those of *Thamnophilus*,

*Myothera*. Inner toe longer than the outer, and cleft to its base; outer toe with its first joint united to that of the middle toe. The tarsus with the anterior scales divided.

*Drymophila*, Sw. Inner toe shorter than the outer toe, which is only slightly connected to the middle. Tarsus (typically) very smooth: all the scales entire.

*D. longipes*. Z. Ill. ii. 23. *leucopus*. Zool. J. ii. 150.  
*fasciata*. Ib. ii. 27.

*Brachypteryx*, Horsfield. Legs very long. Tarsi slender, smooth: all the scales entire. Lateral toes equal. Rump feathers considerably elongated. Tropical India only.

*B. montana*. Horsf. Java. *ptilosus*. Ill. O. iii. pl. 150.

*Myocinclia*, Sw. Legs strong. Inner toe longer than the outer. All the tarsal scales divided. Anterior claws small; hinder claw nearly straight, and as long as the toe.

*M. colma*. Pl. Enl. 821.

*Pithys*, Vieillot. Feet syndactyle. The inner lateral toe shortest; the outer united by its first and second joint to the middle toe. All the tarsal scales entire.

*P. albifrons*. Vieil. Gal. pl. 129.

**PITTA**, Temminck. Bill strong, thrush-like: the culmen gradually curved. Nostrils nearly naked. Wings moderate; the first and second quills but slightly graduated. Tail remarkably short, almost hid by its covers. Feet very long, pale, the scales nearly entire. Inner toe slightly shorter than the outer. India and Australia.

*P. gigas*. Pl. Col. 217.

*streptans*. Ib. 333.

*cyanura*. Pl. Enl. 355.

*brachyura*. Edwards, 324.

*atricapilla*. Pl. Enl. 89.

*cyanoptera*. Pl. Col. 218.

*versicolor*. Z. Jour. i. 468.

*erythrogaster*. Pl. Col. 212.

*granatina*. Ib. 506.

*Chlorisoma*, Sw. Bill as in *Pitta*, but somewhat thicker.

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I think it better to refer to that group; but as it has not been analysed, I do not, in this work, incorporate these two subgenera, although proposed by myself some years ago.

Nostrils protected and nearly covered by incumbent feathers. Rictus bristled. Wings rounded; the four first quills much graduated. Tail moderate, or lengthened, graduated. Feet strong, rather lengthened: the inner toe scarcely shorter than the outer. India. (*fig.* 125, 126. page 25.)

*C. thalassina.* Pl. Col. 401. *Sinensis.* Pl. Enl. 620.

*Grallaria*, Vieillot. Bill thrush-like, as in *Pitta*. Wings rounded; the two first quills graduated, the first half as long as the second, the three next nearly equal. Tail short, and rounded. Legs very long: the tarsus slender, pale; the anterior scales divided, the lateral scales (typically) entire.† Lateral toes nearly equal.

*G. rex.* Pl. Enl. 702. *meruloides.* Ill. Orn. pl. 11.

**MYOPHONUS**, Temminck. Bill strong, thrush-like; but the upper mandible greatly curved at the tip, and destitute of a notch. Wings rounded; the four first quills much graduated. Tail rather short, convex, even; the tip of the feathers mucronate. Legs lengthened, strong, black. Inner toe slightly shorter than the outer. Tarsal scales smooth and entire.

*M. metallicus.* P. C. 170. *nitidus.* Gray. (pl. unpub.)

**CINCLUS**, Bechst. Bill moderate, rather slender, very straight, considerably depressed; the tip obsoletely notched; gonyes ascending. Nostrils naked, membranaceous; the aperture very small and linear. Wings moderate, rounded; the first quill spurious. Tail very short, even. Feet large, very strong, pale; the lateral toes equal: the tarsal scales entire and smooth.

*C. albicollis.* Selby pl. 45\*. *Pallasii.* Gould, C. pl. 24.

*Americanus.* N. Z. Bon. *Asiaticus.* N. Z. ii. 174.

Orn. pl. 16. f. 1.

SUBFAM. MERULINÆ. *True Thrushes.*

Wings more lengthened, and pointed. Bill notched,

† It appears to me that *Chameza* Vig. is more an aberrant species of *Grallaria* than a distinct type in the genus *Pitta*: the only species known chiefly differs in having the tail longer, and the lateral scales divided.

with the culmen gradually curved to the tip, which is bent, but not hooked, over the lower mandible. Feet formed both for perching and walking.

**PETROCINCLA**, Vigors. *Rock Thrushes*. Bill thrush-like: the tip of the upper mandible abruptly bent down, and nearly entire. Wings moderate; the first quill spurious; the second shorter than the three next, which are equal, and the longest. Tail even. Anterior scales divided. Lateral toes equal. Claws small, but slightly curved.

*P. montana*. Ois. d' Af. pl. 101.

*Petrophila*, Sw. Bill thrush-like: the culmen and tip of the upper mandible gradually bent, and entire. Wings and tail as in the last. Legs pale: the anterior scales entire. Lateral toes unequal; the inner shortest. Claws moderate, and fully curved.

*P. cyanocephala*. Gould's Century, pl. 19.

**MERULA**, Willughby. Bill moderate, straight; the culmen slightly curved; the tip distinctly notched: the gape slightly bristled. Wings lengthened, pointed; the first quill spurious; the second a little longer than the third, which is longest. Tail moderate, nearly even. Feet moderately long. Lateral toes almost equal, but the inner rather the shortest. Tarsal scales entire, smooth.

*M. nigra*. Selby, pl. 45. f. 4. *torquata*. Selby, pl. 44. f. 2. *Iliaca*. Ib. pl. 45. f. 3. *cyanotis*. Ill. Orn. pl. 46.

**ORPHEUS**, Sw. General structure of *Merula*. Bill more curved in the culmen; the notch small, or nearly obsolete. Rictal bristles rather strong. Wings rounded; the three first quills graduated. Tail lengthened, graduated, or rounded. Inner toe manifestly shorter than the outer.

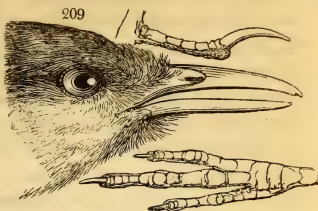
*O. polyglottus*. Wilson, pl. 10. f. 1. *rufus*. Wils. 14. f. 1. *curvirostris*, Pl. Col. 441.

*Cossypha*, Vigors. General structure of Orpheus, but the wings more rounded; and the tail less so. The rictus smooth. Africa only.



leucoceph. W. Af. i. p. 282. vociferus. Z. I. i. pl. 180.  
 albicapilla. Ib. pl. 32. superciliosa. O. d' Af. pl. 111.

**CHÆTOS**, Sw. Bill moderate, thrush-like, notched. Nostrils basal, large, naked, membranaceous; the aperture lateral and linear. Frontal feathers rigid; the shafts



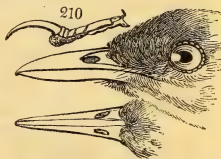
composed of bristles. Chin feathers the same, but weaker. Rictus bristled. Wings very short, and rounded. Tail rather lengthened, broad, convex, soft, and slightly rounded. Tarsi very long and strong: anterior scales divided. Lateral toes unequal. Claws small, obtuse, and slightly curved; the three anterior of equal size. Africa, 1. (*fig. 209.*)

C. Burchellii. N. Zool. ii. p. 487. pl. col. 385.

SUBFAM. CRATEROPODINÆ. *Babblers.*

Legs remarkably large and strong, with the claws but slightly curved. Wings short and rounded. Tail large, broad, graduated, and very soft. Plumage lax. Bill compressed, straight, hard; the tip nearly entire.

**PELLORNEUM**, Sw. Bill moderate, straight, somewhat conic; the tip notched: gonyes ascending. Frontal feathers small, rigid, directed forwards. Rictus

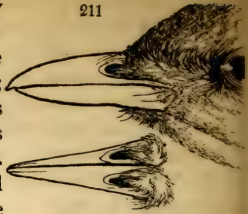


bristled. Wings very short, much rounded. Tail moderate, graduated. Tarsus and middle toe of equal length; lateral toes much shorter, and equal; hinder toe shorter than the tarsus. Anterior claws very small, and but slightly curved. Tarsal scales scarcely divided. (*fig. 210.*)

P. ruficeps. N. Z. ii. p. 487.

**CRATEROPUS**, Sw. Bill nearly as long as the head; more or less straight from the base; much compressed; obsoletely notched. Rictus bristled. Frontal feathers rigid. Wings short, rounded. Tail large, broad, soft, and rounded. Feet very large and strong. Tarsus lengthened; the anterior scales divided. Lateral toes nearly equal; hind toe large, nearly as long as the middle toe. Plumage lax, soft. (*fig.* 211.)

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|--|----------------------------------|
| Reinwardii. Z. Ill. i. 30.                   | * albogularis. Z. P. iii. 187.   |
| ruficeps. Pt. 5. No. 31. ( <i>fig.</i> 211.) | * ocellatus. Ib. iii. 48.        |
| platycircus. W. Af. i. 274.                  | * variegatus. Ib.                |
| atripennis. Ib. 278.                         | * erythrocephalus. Ib.           |
| oriolides. Ib. pl. 31.                       | * squamatus. I. of O. ii. pl. 4. |
| * pectoralis. Z. P. iii. 186.                | * chrysopterus. Z. P. iii. 48.   |
| leucolophus. Lin. Tr. xi. pl. 15.            | * rufo-gularis. Ib.              |

**GRALLINA**, Vieillot.† Bill slender, straight, rather cylindrical above; the sides very little compressed; the base broader than high; the tips of both mandibles distinctly notched. Nostrils naked, basal. Rictus with a few bristles. Wings very long; the first and second quills graduated; the four next the longest. Tail lengthened, even. Feet strong, formed for walking, black; the anterior scales divided, the rest entire. Lateral toes equal; the middle toe and claw short, and very little longer than the hind toe. Australia.

*G. melanoleuca*. Vieil. Gal. pl. 150.

*Cinclosoma*, Horsfield and Vigors. Bill very straight: the culmen and gonyes equally curved towards the

\* These birds I have not examined; but as the characters of the supposed new genus, *Ianthocincla*, under which they have been placed, are precisely those of *Crateropus*, published more than four years previously (*North. Zool.* ii. 1831.), I have no hesitation in introducing them in their proper group.

† I have placed this singular type, on account of its very strong legs, in the present subfamily; but its precise station requires further analysis: it is evidently a representation of *Enicurus*.

point, which is slightly notched. Wings very short; the two first quills graduated; the three next longest, and of equal length. Tail lengthened, broad, graduated; the feathers narrowed towards their tips. Under tail-covers excessively long. Feet moderate; the inner toe longer than the outer. Australia: — analogous to *Accentor* among the *Sylviadæ*.

*C. punctata*. Shaw, Zool. of N. H. pl. 9.

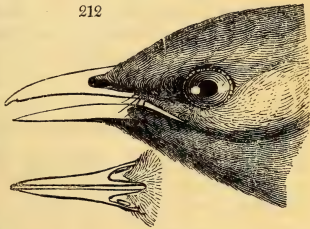
**MALACOCIRCUS**, Sw. Bill more or less curved, by being elevated at the base, having the sides much compressed, and the culmen high and arched: the tip almost entire, and not suddenly bent over the lower. Feet very large. Tail soft, graduated, generally lengthened.

*Malacocircus striatus*. Zool. Ill. ii. pl. 127.

**Megalurus**, Horsfield.

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Bill slender. Rictus bristled. Wings very short; the two first quills graduated; the four next all of the same length, and longest. Tail lengthened, graduated; the feathers narrow. Feet



very large and strong. Toes lengthened; the inner toe rather longer than the outer. Claws slender, and but slightly curved. Anterior scales divided; lateral entire. India.

*M. palustris*. L. T. xiii. 159. *cruralis*. Ib. 228. (*fig. 212.*)\*

**Pomatorhinus**, Horsfield. General structure of *Crateropus*; but both mandibles of the bill are curved and entire, the wings shorter and much more rounded; the four first quills graduated. The tarsal scales entire. Inner toe slightly shorter than the outer.

*P. montanus*. Horsf. Java; also Lin. Tr. xiii. 165.

\* This, if it really belongs to *Megalurus*, is a very aberrant species.

*Timalia*, Horsfield. Plumage lax. Bill straight, rather short, considerably compressed: the culmen high, and gradually arched; the tip obsoletely notched, or entire. Commissure curved. Wings short, rounded. Tail more or less lengthened, graduated. Feet strong. Lateral toes nearly equal. India, Australia, and Africa.

thoracica. pl. col. 76.

pileata. Hors. Java.

Aberrant? \*

Phosphodes crepitans. Lin.

Tr. xv. 329.

Sphænura Africana. O. d' Af.

iii. pl. 112. f. 2.

Dasygnis Australis. L. T. xv.

231.

**PTEROPTOCHUS**, Kittlitz.† Feet of extraordinary size and thickness. All the anterior toes of nearly equal length. The claws long, slender, and but slightly curved. Tail rounded, of fourteen feathers, carried erect. Wings very short. Representing *Menura* and *Orthonyx*. Western Tropical America only.

*P. megapodius*. Z. I. ii. pl. 117.

Kittl. pl. 4.

*rubecula*. Kittl. pl. 2.

*albicollis*. Ib. pl. 3.

#### SUBFAM. ORIOLINÆ. *Orioles*.

Bill thrush-like, as long as the head, broad at the base, compressed beyond: the base and the gape devoid of bristles. Nostrils naked; the aperture large. Wings lengthened. Rump feathers thick. Lateral toes unequal.

**DONACOBIVS**, Sw. Habit and general structure of *Crateropus*. Bill lengthened, slender; the culmen arched from the base; the tip hooked and notched. Nostrils large, naked, membranaceous; the aperture large, oval, terminal. Wings remarkably short, and rounded. Tail moderate, broad, cuneated. Feet very large and strong. Lateral toes equal. Claws slender, acute, slightly curved. America only.

*D. vociferans*. Zool. Ill. ii. pl. 72.

\* Of all these types, or subgenera, there is but a single example of each; and as the whole of this subfamily requires a proper analysis, I have thought it best not to notice them, for the present, in a more prominent manner.

† See Vol. I. p. 219.

**SERICULUS**, Sw. Bill rather stout, resembling that of *Oriolus*. Nostrils naked. Wings moderate; the two first quills equally graduated; the third nearly as long as the fourth. Tail moderate, even. Feet strong, robust. The tarsus much longer than the hind toe; inner toe shortest. Australia.

*S. chrycocephalus*. Lewin, pl. 1.

**ORIOLUS**, Linnæus. Bill as long as the head; broad at the base; the tip distinctly notched, and somewhat hooked. Nostrils short, nearly naked; the aperture lateral, large, and oval. Wings rather lengthened; the first quill very short; the second not quite so long as the third, which is usually the longest. Tarsus rather short; longer than the hind toe and claw: the anterior scales divided. The Old World.

*Galbula*. Pl. Enl. 26.

*auratus*. W. Af. ii. pl. 1.

*Sinensis*. Pl. Enl. 570.

*coronatus*. Part 5. No. 181.

*melanocephalus*. O. d' Af. 263.

*Capensis*. \* O. d' Af. 261-2.

*Hodsonii*. Part 5. No. 30.

*Zanthonotus*. Horsf. Java.

*brachyrynchus*. W. Af. ii.

*viridis*. Ency. Meth. 696.

*flavocinctus*? L. T. xv. 327.

*meruloides*? Ib. xv. 327.

*Paradiceus*. Edw. 112.

*Irena*, Horsfield. Bill of *Oriolus*; but the culmen much raised, and considerably arched from the base, and rather hooked at the tip. Nostrils partly defended by short plumes, which cover the membrane. Rictus slightly bristled. Wings and tail as in *Sericulus*. Feet small. Tarsus very short, scarcely longer than the hind toe and claw; the anterior and lateral scales entire. Inner toe rather the shortest. Rump feathers very thick, and slightly spinous. India.

*I. puella*. Horsf. Java. Pl. col. 70.

**DULUS**, Vieillot. Bill very short, much compressed, but with the culmen elevated and arched. Commissure curved. Nostrils as in *Oriolus*. Wings rather short; the first quill not half as long as the second; the

\* The various names given to this species, as *bicolor*, *monachus*, and *larvatus*, being equally applicable to four others, I have ventured to designate it by one which indicates its peculiar locality.

third, fourth, and fifth, longest; the secondaries with the tips notched; the tertials lengthened. Tail moderate, slightly forked. Feet as in *Oriolus*. Claws strong, broad, much curved. S. America.\*

*D. palmarum*. Pl. Enl. 156. f. 2. *nuchalis*. Part 5. No. 192.

**SPHECOTHERES**, Vieill. Bill rather short, strong, par taking of the structure both of *Dulus* and *Oriolus*; the base broad, and the commissure straight; gape very wide, reaching to beyond the eye. Nostrils naked; the aperture large, oval. Rictus smooth. Wings, tail, and feet, as in *Dulus*. Tarsus hardly longer than the hind toe and claw. Australia only.

*S. viridis*. Vieil. Gal. pl. 147. *canicollis*. Part 5. No. 117.

#### FAMILY SYLVIADÆ. *Warblers*.

Size universally small. Bill very slender, distinctly notched. Feet formed for walking, perching, or climbing. Tarsus slender, lengthened.

#### SUBFAM. SAXICOLINÆ. *Stonechats*.

Bill depressed at the base: gape with diverging bristles. Feet lengthened. Tail rather short. Head large.

**GRILLIVORA**, Sw. Bill strong, lengthened, straight; the base rather widened; the sides compressed; the culmen slightly curved from the base; the tip of the upper mandible considerably bent over the lower, and deeply notched: gonys rather ascending. Nostrils large, naked, sulcated. Wings moderate, rounded; the three first quills graduated. Tail more or less lengthened and rounded; the feathers broad and obtuse at their tips. Feet strong. Middle toe as long as the tarsus; lateral toes very unequal, the innermost shortest; hinder toe shorter than the middle. India, Africa.

*G. intermedia*. Zool. Ill. ii. 61.

*brevirostra*. Part 5. No. 35.

*magnirostra*. Ib. No. 33.

*longicauda*. O. d' Af. pl. 114.

? *Capensis*. Ib. pl. 184.

*rosea*. Part 5. No. 182.

\* The first appearance of this excessively rare type strongly reminds us of the genus *Indicator*, in the shortness of the bill, which is, however, more compressed; and the feet, of course, are quite different.

**THAMNOBIA**, Sw. Bill small, slender; base widened; the sides much compressed: culmen slightly arched from the base, but the tip of the upper mandible is reflected and entire: gape smooth. Wings short, much rounded; the primaries hardly exceeding the secondaries and tertials, which are very broad. Tail moderate, broad, and much rounded. Tarsus much longer than the middle and hinder toes. Lateral toes very unequal, the inner shortest. Claws slightly curved.

*T. leucoptera*. O. d' Af. pl. 188. f. 1. atrata. Part 5. No. 36.

**SAXICOLA**, Bechstein. Bill broad at the base, compressed on the sides; the tip inflected, and distinctly notched. Wings moderate; the first quill spurious; the second slightly shorter than the three next, which are equal, and longest. Tail short, even, or rounded. Tarsi long. Lateral toes unequal. The Old World.

*S. leucoptera*, Part 5. No. 37. *rufiventer*. Part 5. No. 38. *rubecola*. Selby, pl. 48. f. 3, 4.

**ERYTHACA**, *Robins*. General structure of *Saxicola*, but the tail more lengthened, the feathers narrowed at their tips, and sometimes mucronate. Rictus with the bristles few, and very weak.

*Erythaca*, Sw. Wings rounded; the three exterior quills graduated; the first half as long as the second; the third slightly shorter than the fourth and fifth, which are equal, and longest. Bill much compressed. Lateral toes nearly equal.

*E. rubecola*. Selby, pl. 46. f. 2.

**SIALIA**, Sw. Bill wider at the base. Wings long; the first quill spurious; the second slightly shorter than the two next, which are equal and longest. Tarsus moderate, not longer than the middle toe. Lateral toes equal.

*S. Wilsonii*. Wils. pl. 3. f. 3. *Mexicana*. N. Z. p. 202. *arctica*. N. Z. pl. 39.

**PETROICA**, Sw. Tip of the bill abruptly deflexed or

hooked; the notch very distinct: gape strongly bristled. Wings lengthened; the first quill spurious, the second shorter than the third, the fourth longest. Tail moderate, resembling *Erythaca*. Tarsus moderate. Inner toe much shorter than the outer. Australia.

*P. multicolor*. Z. Ill. ii. pl. 36. *bicolor*. Z. Ill. ii. pl. 43.

SUBFAM. PHILOMELINÆ. *Nightingales*.

General structure larger and more robust than the typical warblers. Feet formed more for perching.

**PHŒNICURA**, Sw. *Redstarts*. Bill very straight and slender; the culmen depressed above the nostrils; the gonys ascending; the commissure inflexed: gape nearly smooth. Wings moderate; the first quill spurious, the second and the eighth equal, the fourth and fifth equal, and longest. Tail broad, slightly rounded. Tarsi lengthened, slender. The lateral toes almost equal.

*P. rutacilla*. Selby, 46. f. 3. *caliope*. Lath. Sup. Vig.  
*Suecica*. Pl. Enl. 610. f. 1. *atrata*. Ill. Orn. pl. 86.

**PHILOMELA**, Antiq. *Nightingales*. Bill rather strong, short; the culmen straight towards the base, and more than usually curved just at the tip: under mandible nearly as thick as the upper; the gonys ascending; the commissure straight, but not inflexed. Wings moderate; the quills straight and narrow; the first quill spurious; the second shorter than the third and fourth, which are the longest. Feet moderate, stout. The inner toe rather the shortest. The claws short, and fully curved.

*P. atricapilla*. Selby, 46. f. 2. *Orphea*. Pl. Enl. 579. f. 1.  
*melanocephala*. In. O. ii. 509. *sericea*. Tem. Man. i. 197.  
*Luscinia*. Selby, 46. f. 1. *nisorea*. Nau. pl. 33. f. 67.  
*germanica*. N. pl. 26. f. 52.

**CURRUCA**, Bechst. Resembling *Philomela*, but the general structure is more delicate. Bill lengthened, slender; the culmen gently curved from the base. Wings



broader ; the shafts curved ; first quill very minute, the second as long as the third. Tail broad, graduated or cuneated. Feet lengthened, slender. The inner toe much shorter than the outer. The claws long, slender, and but slightly curved.

hortensis. Selby, 46. f. 4. turdoides. Pl. Enl. 513.  
 cinerea. Ib. 46. f. 6. fluviatilis. Tem. Man. i. 183.  
 locustella. Ib. 45\*\*. f. 1. aquatica. Nau. pl. 47. f. 106.  
 phragmitis. Ib. 45\*\*. f. 2. palustris. Tem. Man. i. 193.  
 arundinacea. Ib. 45\*\*. f. 3.

**BRADYPTETUS**, Sw. General size and habit of *Curuca*. The bill distinctly notched. Wings short ; the three first quills equally graduated. Tail rounded ; the feathers remarkably broad and soft. Feet large, strong, and robust ; the lateral toes equal. Claws slender, slightly curved. Africa.

B. platyurus. Ois. d' Af. pl. 122.

**AGROBATES**, Sw. Bill thrush-like ; the sides much compressed ; the tip bent and entire : gape smooth. Wings and tail as in *Philomela*. Feet very strong. Tarsus lengthened. Toes short ; the inner shorter than the outer. Claws slender. South of Europe, Africa.

A. galactotes. Tem, Pl. Col. 251. f. 1.

SUBFAM. SYLVIANÆ. *True Warblers.*

Size very small. Structure weak. Bill very slender, straight, and with the under mandible much thinner than the upper.

**ORTHOTOMUS**, Horsfield. Bill straight, lengthened ; the tip entire ; the gonyes only half the length of the under mandible. Wings excessively short, and rounded ; the three first quills equally graduated. Tail typically short, rounded, or graduated. Tarsus lengthened. Inner toe shorter than the outer. India.

O. longirostris. Pt. 5. No. 183. sphenurus. Ib. No. 184.

N. B. *Prinia familiaris* Horsf. is probably an aberrant species.

**MALURUS**, Vieill. Bill short. Wings considerably rounded. Tail lengthened, graduated, generally soft. Legs large.

*Hemipteryx*, Sw. Bill of *Drymoica*. Wings excessively short; the tertials as long as the primaries; the first quill minute; the second hardly shorter than the four next, which are equal, and longest. Tail very short. Feet as in the next, but the inner toe is longer than the outer. Africa, 3 sp.

Le Pinc-pinc. Ois. d' Af. pl. 131.

*Drymoica*, Sw. Bill entire, short. The rictus bristled. Wings very short, and rounded; the three first quills equally graduated; the fourth and fifth longest; the primaries hardly longer than the other quills. Legs pale. The lateral toes equal. Tail graduated; the feathers obtuse. Africa, South of Europe.

*D. cisticola*. Pl. Col. 6. f. 3. Le capocier. O. d' Af. pl. 129.

*Melizophilus*, Leach. Upper mandible distinctly notched; rictus slightly bristled. First quill spurious; the second shorter than the three next, which are the longest. Tail lengthened, rounded; the feathers narrowed towards their tips. Legs moderate. Lateral toes equal. Claws small, and slightly curved. Europe.

*M. provincialis*. Selby, pl. 46. f. 6.

*Malurus*, Vieillot. Rictus with stiff bristles. Wings short; the first quill half as long as the second; the two next slightly graduated. Tail lengthened, graduated; the tips broad and truncate. Legs large, long, and slender; inner toe much shortened. Australia only.

*M. cyaneus*. Lath. Gen. Hist. pl. 106.

*SYLVIA*, Latham. Wings long. Claws much curved. Tail moderate, even, or slightly forked.

*Sylvia*. Tail slightly forked; the feathers not mucronate. Wings long; the first quill minute, the second and fourth equal, the third longest. Tarsus moderate. The inner toe much shorter than the outer. Europe.

*S. Hippolaïs*. Selby, pl. 47. f. 1. *trochilus*. Ib. pl. 47. f. 3.

*Acanthiza*, Horsfield and Vigors. Wings moderate or lengthened, rounded; the first quill half as long as

the second, which is shorter than the four next ; the third, fourth, and fifth longest, and nearly equal. Tail moderate, either slightly forked, or slightly rounded ; the tips sometimes ending in mucronate points. Feet moderate. The inner toe shortest. Australia.\*

A. nana. Lin. Tr. xv. 226.

*Regulus*, Ray. Tail slightly forked, ending in mucronate points. Wings long ; the first quill spurious ; the second much shorter than the third, fourth, and fifth. Feet as in *Sylvia*.

R. auricapillus. Selby, pl. 47. f. 4.

*Cyanotis*, Sw. Habit of *Regulus*. Wings slightly rounded ; the first and second quill very little shorter than the third. Tail rounded, obtuse. Feet uncommonly large and slender. Inner toe much shorter than the outer. Claws very long, and but slightly curved.† Brazil.

R. omnicolor. Vieil.

*CULICIVORA*, Sw. Bill somewhat lengthened ; the base depressed ; the sides compressed ; the culmen arched from the base ; the tip notched. Rictus with distinct bristles. Wings very short ; the two first quills only equally graduated. Tail slender, graduated, and generally lengthened. Tarsus long, slender. Inner toe shortest. Claws small, fully curved. America only.

C. atricapilla. Zool. Ill. ii. pl. 57.

*PRATICOLA*, Sw.‡ Aspect of *Anthus*. Culmen not depressed before the nostrils. The upper mandible notched ; the margins not inflexed. Frontal feathers

\* We may account for the great variation in this very natural group, by supposing it is that which connects *Sylvia* to *Malurus*.

† This seems the tropical representation of *Regulus* : it is at once known by its disproportionately long toes and claws. It is the *Reg. Byronensis* of Griff. Cuv.

‡ Although this extraordinary form has all the aspect of an *Anthus*, I cannot but think that this is merely its disguise, and that its natural affinities are in this group. It has a strong resemblance to *Acanthiza*, and more to *Orthotomus*, in its tail and wings. I have therefore placed it as the representation of *Anthus* in this group, until its affinities are better understood.

rigid and semi-setaceous. Wings very short and rounded; the two first quills equally graduated; the five next of equal length, and longest. Tail moderate, graduated; the feathers broad, the tips oval. Legs very large and strong. Tarsus and middle toe equal; hinder toe and claw rather shorter; lateral toes equal. Claws slender, and but slightly curved; hinder claw large, and as long as its toe. *Australia.*

*P. anthoides.* Part. 5. No. 185.

SUBFAM. PARIANÆ. *Titmice.*

Bill either entire, or very slightly notched, more or less conic. Tarsus never shorter than the hind toe, which is large and strong. Lateral toes unequal.

SETOPHAGA, Sw. Bill depressed, resembling that of a *Muscicapa*. Rictus bristled. Wings moderate, somewhat pointed; the first quill slightly shorter than the second, the third quill longest. Tail somewhat lengthened, rounded; the feathers terminating in soft points. Tarsus slender, lengthened. (*fig. 213. a, b*)

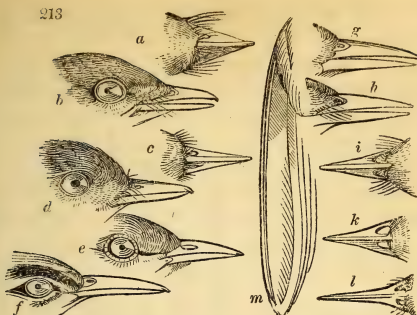
<i>S. ruticilla.</i> Wil. pl. 6. f. 6.	<i>miniata.</i> Part 5. No. 40.
<i>canadensis.</i> Ib. pl. 26. 2.	<i>auricapilla.</i> Ib. No. 41.
<i>cucullata.</i> Ib. pl. 26. f. 3.	<i>rufifrons.</i> Ib. No. 42.
<i>rubra.</i> Part 5. No. 39.	

SYLVICOLA, Sw. *Fly-catching Warblers.* Bill slender, notched a little way from the tip. The rictus weakly bristled. Wings long; the first quill nearly, or fully, as long as the others. Feet slender.

*Dumecola*, Sw. (*c, d*) Bill small, widened at the base; the sides compressed. The first quill, and sometimes the second, slightly shorter than the following. Tail even, or slightly rounded; the tips mucronate. Tarsus longer than the hind toe. Inner toe shortest.

*D. ruficauda.* N. Z. 489. *caniceps.* Braz. B. pl. 49.

*Sylvicola*, Sw. Bill very slender, acutely conic; the tip of the upper mandible with an obsolete notch;



base with a few weak bristles. Wings lengthened, pointed; the three first quills nearly equal. Tail nearly even; the feathers ending in soft points. Feet as in *Setophaga*. (fig. 213. m. 214. a, f)

*S. pusilla*. Wil. pl. 38. f. 3. *minuta*. Z. Ill. i. pl. 139.

*Vermivora*, Sw. (fig. 213. g) Bill rather lengthened, acutely conic, entire. Wings and tail as in *Sylvicola*. Middle toe as long as the tarsus; lateral toes slightly unequal. Legs pale.

*fulvicapilla*. Wil. pl. 24. f. 4. (g) *pinus*. Ib. pl. 19. f. 4. (h, i)

*Mniotilta*, Vieillot. (f, l) Bill rather lengthened: culmen slightly arched: gonys straight; the margins inflexed: upper mandible obsoletely notched. Wings lengthened, pointed. Tarsus and middle toe of equal length; inner toe shortest; hinder toe lengthened, nearly as long as the tarsus; its claw much curved.

*M. varia*. Wilson, pl. 19. f. 3.

*Zosterops*, Horsfield and Vigors. (e, k) Bill rather stouter than in *Sylvicola*, acutely conic, almost entire. Ric-tus smooth. Wings moderate, pointed; the first quill rather shorter than the three next. Tail as in *Sylvicola*. Feet strong. Tarsus longer than the middle toe; lateral toes unequal. Eyes encircled

with compact white feathers. India, Africa, and Australia.

*Z. dorsalis*. Z. Ill. i. 165.  
*flava*. West Af. ii.  
*pallida*. Part 5. No. 43.

*cinerea*. Part 5. No. 44.  
*ambigua*. Ib. No. 45.

**PARUS**, Linnæus. Bill stronger. Wings with the three first quills graduated. Feet strong. Inner toe shortest. Claws broad, and much curved.

*Ægithina*, Vieillot. Bill lengthened, rather stout: culmen very slightly curved; the sides somewhat cylindrical: the upper mandible notched. Wings short; the first quill shorter than the second. — (*Vieillot.*) (*fig. 214. b*)

*Æ. leucoptera*. Vieil. Ois. d'Am. ii. pl. 84.

*Ægithalus*, Vigors. (*fig. 214. g*) Bill very straight; the form acutely conic; sides compressed; tips entire. Rictus smooth. Wings short, rounded. Feet robust. Tarsus short. Anterior toes nearly equal.

*Æ. Capensis*. Ill. of Orn. iii. pl. 113. f. 1.

**Parus**, Linn. Bill rather short, strong, conic; the sides compressed; tip entire. Tail rather lengthened, convex, even, or more or less rounded. Feet large and strong. Middle and hinder toes equal; lateral toes unequal. (*fig. 214. h, k*)

*P. major*. Selb. pl. 51. f. 1. *biarcticus*. Selb. pl. 51. f. 6.  
*caudatus*. Ib. pl. 51. f. 5. *leucopterus*. West. Af. ii.

**Parisoma**, Sw. Bill very short, straight; sides considerably compressed: upper mandible arched from the base, and notched; lower thick: the gonyx



ascending. Rictus with a few weak bristles. (*fig.* 214. *e, i*) Lateral toes equal. Africa.

*P. rufiventer.* Ois. d' Af. pl. 126.

*Hylophilus,* Temminck. Bill stout, conic: both mandibles of nearly equal thickness; the upper one slightly notched, and both acute: gonys ascending. Wings rather short, rounded. Tail moderate, rounded. Feet as in *Parisoma.* (*fig.* 214. *c, d*) America.

*H. poicilotis.* B. B. ii. 89. f. 1. *thoracicus.* Ib. ii. f. 2.

**ACCENTOR,** Bechstein. Bill rather strong, conic; the base widened, the sides compressed: both mandibles equally thick; the tip of the upper entire; margins inflexed. Wings long, pointed; the first quill hardly shorter than the second and third, which are the longest. Tail slightly forked. Feet large, strong. Tarsus longer than the middle toe, which is shorter than the hinder. Lateral toes almost equal. Europe.

*A. alpinus.* Il. Or. pl. 68. *modularis.* Selby, 43. f. 4.

*Seiurus,* Sw. Bill with the upper mandible notched. Tail even. Middle toe much longer than the hinder. America. Annectant to *Trichas.*

*S. auricapillus.* Wils. pl. 14. f. 2. *aquaticus.* N. Z. pl. 43.

**TRICHAS,** Sw. Bill somewhat conic, compressed; the base a little widened: both mandibles equally thick; the upper very slightly bent and notched: gonys ascending. Rictus bristled. Wings short; the first and second quills slightly graduated. Tail rounded. Feet large, slender. Tarsus long. Middle toe shorter than the tarsus; lateral toes equal.

*T. personata.* W. i. pl. 6. f. 1. *superciliosa.* Sw. Part 5. No. 46. *velata.* Zool. Ill. i. pl. 174.

SUBFAM. MOTACILLINÆ. *Wagtails.*

Bill lengthened; very straight and slender. Legs long, formed for walking. The hind toe much longer than the rest. Wings pointed. Tail narrow, and much lengthened.

**LESSONIA**, Sw. Bill depressed, resembling that of a flycatcher. Rictus with weak bristles. Wings long, pointed; the first quill scarcely shorter than the second and third, which are the longest. Tail moderate, divaricated or even. Tarsi and toes very long and slender. Lateral toes equal. Claws acute, slightly curved; the hinder much lengthened, and almost straight. South America.

*L. erythronotus*. Sw. N. Zool. ii. 490. Pl. Enl. 738. f. 2.

**BUDYTES**, Cuv. Bill weak and slender; very strait. Gonys slightly ascending: upper mandible notched. Rictus smooth. Wings pointed; the three first quills nearly equal. Legs large, and very slender. Tarsus and middle toe equal. Lateral toes equal, but the inner claw longer than the outer; hind toe as long as the tarsus. All the claws slender, acute, and but slightly curved.

*B. flava*. Selby, 49. f. 3.

**MOTACILLA**, Linnæus. Bill, wings, tail, and general structure of *Budytes*. Middle toe shorter than the tarsus. Lateral toes equal; their claws nearly so: hinder toe as long as its claw; the latter not lengthened, and only half as long as the tarsus.

*M. alba*. Selby, pl. 49. f. 1. *boarula*. Selby, 49. f. 2.

**ENICURUS**, Temminck. Bill rather strong, lengthened, very straight, abruptly bent, and notched. Culmen straight from the base. Gonys thickened, ascending. Rictus bristled. Wings rather short; the three first quills graduated. Tail lengthened; deeply forked. Feet strong. Tarsus lengthened; the scales entire. Middle toe shorter than the tarsus; outer toe longest. Legs pale.

*E. speciosus*. Horsf. Java. Pl. Enl. 113.

**ANTHUS**, Bech. Bill very slender; the sides compressed: the upper mandible longest, with the tip deflexed over that of the lower, and distinctly notched. Wings moderate; the four first quills nearly equal; tertials obtuse, lengthened. Tail moderate, slightly forked.



Legs slender, black. Tarsus and middle toe equal. Lateral toes and claws of the same length and size.

A. aquaticus. North. Zool. pl. 44.

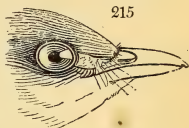
FAMILY AMPELIDÆ. *Fruit-eaters, or Chatterers.*

Bill short; base broad; sides compressed; the tip notched and sometimes hooked. The gape very wide, opening beyond the eyes. Feet short, or long and very weak: the toes more or less united; the soles flat. Inhabit Tropical America only.\*

SUBFAM. LEIOTRICHANÆ. *Silky Chatterers. ?*

Legs large, robust, syndactyle. Hind toe longer than the outer. Wings short, and rounded. Bill strong: the gonys ascending.

LEIOTHRIX, Sw. (*fig. 215.*) Bill much compressed. Culmen gradually curved. Nostrils large, membranaceous. Tail moderate, deeply forked.



L. furcatus. Pl. Col. 287. f. 1. India.

PTERUTHIUS, Sw. (*fig. 216.*)

Bill short, compressed, thick; the tip shrike-like, hooked: culmen arched: gonys ascending. Nostrils basal; the aperture round. Gape wide. Rictus slightly bristled. Wings very short, rounded. Tail short, broad, rounded; the tips obtuse. Tarsi smooth, pale.



P. erythropterus. Gould's Cent. pl. 11. India.

SUBFAM. VIREOINÆ. *Greenlets and Thickheads.*

Bill generally lengthened, moderately strong, compressed; somewhat shrike-like: the gonys ascending; the tip hooked. Nostrils and mouth with setaceous hairs. Wings more or less pointed. Tail moderate, even, or

\* Excepting *Pardalotus*, the *Leiotrichanæ*, *Pachycephalus*, and *Calypotomina*.

divaricated. Feet rather strong. Inner toe shortest. —  
*Obs.* The large species resemble thrushes; the smaller,  
 warblers. The tenuirostral type.



**VIREO**, Vieil. (*fig. 217. a*) *Greenlets*. Sect. 1. Stature small, sylviform. Bill strong, resembling a *Myothera*; but the base broad. Wings long. Claws large, much curved. Plumage, above, green. *V. olivaceus*.

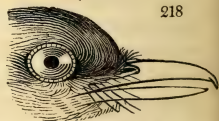
Sect. 2. Wings shorter; the first quill nearly spurious. Tail rounded. (*b*)

*V. olivaceus* Wils. pl. 12. f. 3. (*a*)

**PACHYCEPHALA**, Sw. (*fig. 217. c, d*) *Thickhead*. Bill either like *Vireo*, or short, thick, and somewhat conic. Rictus strongly bristled. Under mandible strong. Wings moderate: the three first quills graduated. Tail broad, even, mucronate. Feet strong. The outer toe connected as far as the first joint; inner toe short. Anterior scales divided; lateral entire. Australia only.

*P. fusca*. Lin. Tr. xv. 240. (*c*)

**Eopsaltria**, Sw. (*fig. 218.*) Bill as in *Pachycephala*, but more lengthened, straight; the tip abruptly hooked. Gonys straight. The rictus slightly bristled. Wings rather lengthened. Legs slender. Toes long. Tail divaricated. Australia 1.



*E. flavicollis*. Lewin, pl. 23.

**PTILOCHLORIS**, Sw. *Lunet*. Bill as in *Vireo* (Sect. 1.). The front, nostrils, and rictus strongly bristled. Wings long; the third quill longest. Tail rather short, slightly rounded; the feathers mucronate; tarsi moderate, longer than the hind toe. Toes subsyn-

dactyle: lateral toes nearly equal; middle toe shorter than the hallux. Claws fully curved.

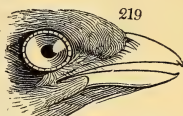
*P. lunatus*. North. Zool. ii. p. 492. Braz. B. pl. 95.

SUBFAM. BOMBYCILLINÆ. *Swallow Chatterers*.

Wings much lengthened and pointed; the first quill equal, or nearly so, to any of the others. Bill short, strong, broad: under mandible strong: the gonys ascending: gape smooth, very wide. Nostrils partly protected by velvety feathers. Feet robust. Tarsi short. Lateral toes nearly equal.

PHIBALURA, Vieil. (*fig.*

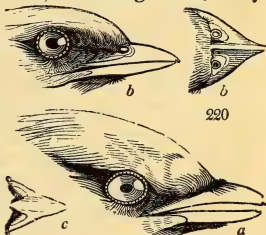
219, 220. *c*) Bill remarkably short, but rather strong. Culmen arched. Nostrils concealed. Gape enormous; the sides smooth. Feet pale. Anterior scales transverse; lateral scales minute, reticulate. Tail lengthened, deeply forked.



*P. cristata*. Zool. Ill. i. pl. 31.

BOMBYCILLA, Briss. (*fig.* 220. *a*) Plumage soft, silky.

Wings long; the greater quills graduated from the first; the lesser nearly of equal length. Tarsi feathered below the knees. Hind claw shorter than the lateral toes, which are nearly even. Tail short, even.



*B. garrula*. Selby, i. pl. 34.\*

PROCNIAS, Hoff. (*fig.* 220. *b*) Bill very broad; the sides inflected; the tip not hooked. Nostrils nearly naked. Wings pointed; the three first quills longest. Inner toe shorter than the outer. Tail slightly forked.

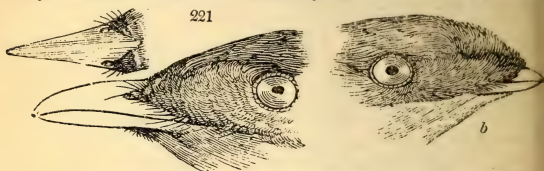
*P. ventralis*. Zool. Ill. i. pl. 21.

\* In colour, and in the lunate marks upon the breast, this species closely resembles *Blechnopus*.

SUBFAM. AMPELINÆ. *The Typical Chatterers.*

Middle-sized. Feet short, robust. Bill weak; the gonyx not ascending. Nostrils large, membranaceous; the aperture terminal. Rictus smooth. Soles of the feet broad, flat. Lateral toes unequal; outer connected to the middle. Lateral scales of the tarsus numerous, small, reticulate. Wings moderate, ample; the first quill shorter than the second.

CALYPTOMINA, Raffles. (*fig. 221. a, b*) Bill nearly hid by an erect compressed crest, lying over the base; the



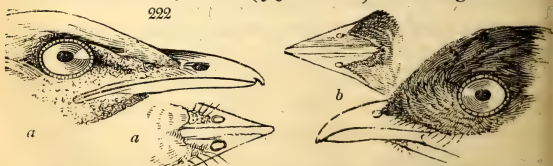
tip hooked. Wings large, very broad; the first quill shortest, the third longest; the lesser quills emarginate at their tips. Tail very short. Feet short. Hinder toe as long as the tarsus; outer and middle toe connected as far as the second joint.

C. Rafflesia. Sw. Pl. Col. 216. caudacuta. Part 5. No. 50.

CHRYSOPTERYX, Sw. (*fig. 221. a*) Size large. Bill lengthened, strong, thrush-like, the sides inflected. Culmen elevated and arched. Gonyx not short, inclining upwards. Nostril defended by short weak bristles. Wings and feet as in *Casmorhynchus*. Tail longer, broad, and even at the ends.

C. erythrorhynchus. Sw. N. Zool. p. 492.

CASMORHYNCHUS, Tem. (*fig. 222. a*) Size large. Face



and throat frequently bare of feathers, covered with

a naked skin, or furnished with wattles. Bill very wide at the base ; the horny portion very short: under mandible weak, the gonys remarkably short. Nostrils naked, very large, medial between the front and the tip of the bill. First and second quill short, third quill longest. Tail short.

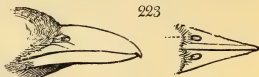
*C. nudicollis.* Pl. Col. 368. 383. (*a*)

AMPELIS, Linn. (*fig. 223.*) Plumage brilliant, glossy.

Nostrils partly covered by setaceous feathers.

Wings ample ; the first quill hardly shorter than

the three next. Tail short. Lateral toes almost equal.



A. Cayana. Pl. Enl. 624.

Sect. 2. Smaller. Head feathered. Nostrils plumed. Tail longer. (*fig. 222. b*)

*P. melanocephalus.* Z. I. i. pl. 25. *cucullatus.* Z. I. i. pl. 37.

RUPICOLA, Briss. Head with an elevated compressed crest, advancing on the front, and partly concealing bill. Bill strong, robust. Feet large, strong. Tarsus partly covered with feathers. Toes syndactyle : outer toe connected to the middle toe beyond its second joint. Wings short, rounded.

R. Cayana. Pl. Enl. 39. Peruviana. Pl. Enl. 745.

SUBFAM. PIPRINÆ. *Manakins.* Subtypical.

Size small. Feet lengthened, slender, weak. Bill very short : the upper mandible much curved.

PHÆNICIRCUS, Sw. (*fig. 224.*)

Size and habit of *Ampelis.*

Bill small, rather weak. Wings very short, convex, rounded ; the three first quills narrow, and of equal length ; the fourth much shorter, and ending in a point. Tail broad, even.

Feet short, strong. Toes syn-



dactyle. Tarsi feathered, on their inner side only, as far as the toes. Claws strong, curved.

*P. carnifex*. Edwards, 1. 39. *militaris*? O. d'Amer. pl. 25.  
*nigricollis*. Spix, ii. pl. 5.

PIPRA, Lin. (*fig. 225.*) *Man-*

*kins*. Size very small. Bill weak:

the upper mandible bent over the lower, which is flattened and nearly straight: notch

small. Wings more or less rounded. Tail short, even. Toes syndactyle.

*P. strigilata*. Brazil. Birds, pl. 25.

*Metopia*, Sw. (*fig. 226.*) Front

with an elevated compressed crest. Wings lengthened,

very broad. Tail broad, lengthened, rounded.

*M. galeata*. Braz. B. i. pl. 23.

CALYPTURA, Sw. Bill short, strong, robust, shrike-like; the sides somewhat gibbous: the notch deep and tooth-like. Under mandible strong. Wings short, rounded. Tail remarkably small, almost concealed. Feet lengthened, slender; toes syndactyle. Brazil, 1.

*C. cristata*. Brazil. Birds, pl. 24.

PARDALOTUS, Vieil. (*fig. 227.*)

Bill as in *Calyptura*. Wings

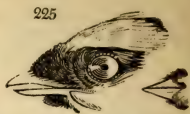
long, pointed; the three first quills of equal length. Tail

short, even. Feet strong; lateral toes free and equal. Australia, 3.

*P. punctatus*. Pl. Col. 78.

#### FAMILY MUSCICAPIDÆ. *Flycatchers.*

Stature small. Bill considerably depressed its entire length, broad: the edge of the upper mandible folding over that of the lower; the tip abruptly bent and notched. Rictus wide, defended with strong rigid bristles



pointing forwards. Feet almost always short\*, small, and weak. Feed solely upon insects captured during flight. Habits sedentary.

SUBFAM. QUERULINÆ.

Bill strong, broad, much depressed; gape wide. Rictus with strong bristles. Feet short, resembling those of the typical *Ampelinæ*. Lateral scales minute.

QUERULA, Vieil. Bill large, broad, strong. Gonys long, straight. Nostrils concealed by incumbent reflected feathers. Wings long, broad; the fourth quill longest. Toes unequal; inner toe shortest, of equal length with the hind toe. Tail even.

*Q. rubricollis*. Vieil. Gal. pl. 115.

LATHRIA, Sw. Bill weaker. Gonys short, straight. Nostrils large; the opening apparent, but defended with setaceous bristles. Wings moderate; the quills narrow. Feet weak. Lateral toes equal. In general structure closely resembling the tyrants, except in the feet, mouth, and bill. Brazil, 3 sp.

*L. cinerea*. Le Vieil. Am. pl. 44.

SUBFAM. PSARIANÆ. *Black-Caps*.

Bill large, thick, subcylindrical. Culmen convex, and without any ridge; the tip abruptly bent and notched. Head large, depressed. Mouth very wide. Feet weak: Lateral toes unequal. Anterior scales of the tarsi transverse; lateral scales small, numerous. Wings long.

PSARIS, Cuv. Bill large. The rictus smooth, often naked round the eye. Wings lengthened; the first quill equal, or longer than the fourth. Tail short, even. Inner toe shorter than the outer.

<i>P. Cayanensis</i> . Pl. Enl. 377	<i>semifasciatus</i> . Ill. of Orn.
<i>erythrognis</i> . I. O. i. 10.	<i>Jardinii</i> . Z. Ill. ii. pl. 35.
<i>Guianensis</i> . Part 5. No. 17.	<i>cristatus</i> . Ib. ii. 41.
<i>Braziliensis</i> . Ib. No. 18.	<i>strigatus</i> . Part 5. No. 21.
<i>Natterii</i> . Ib. No. 19.	<i>Selbii</i> . Ib. No. 20.

PACHYRHYNCHUS, Spix. Stature smaller. Wings more

\* Except in the rasorial types, where of course they are longer.

rounded; the first quill shorter than the fourth. Tail lengthened, rounded. Lateral toes equal. Brazil.

- |                               |                             |
|-------------------------------|-----------------------------|
| P. Cuvieri. Zool. Ill. i. 32. | pectoralis. Part 5. No. 25. |
| castaneus. I.O.pl.10.f.1.     | leucogaster. Ib. No. 26.    |
| megacephalus. Part 5.         | albifrons. Ib. No. 27.      |
| No. 22.                       | Spixii. Ib. No. 28.         |
| ruficeps. Ib. No. 24.         | niger. Ib. No. 29.          |

SUBFAM. FLUVICOLINÆ. *Water-Chats.*

Legs formed for walking. Tarsi lengthened, strong. Inhabit the sides of marshes and rivers in Tropical America. *Seisura*, alone, is Australian.

GUBERNETES, Vigors. Tail very long, excessively forked; the first quill nearly as long as the three next. Lateral toes equal. Claws long, acute, and slightly curved.

G. forficatus. Zool. Journal, ii. pl. 4.

ALECTURUS, Vieil. Tail compressed on the sides, erect, broad, with the shafts of some of the feathers naked and lengthened. Head very large. Bill short, strong, triangular, depressed, without a culmen. Feet large. Wings rounded.

A. psalurus. Pl. Col. 286.

FLUVICOLA, Sw. Bill somewhat lengthened, smooth and convex above, generally without any culmen. Feet strong, large; the transverse anterior scales enveloping the tarsus. Wings long, pointed; the second quill longest. Tail even or rounded. Plumage varied with black and white.

F. cursoria. Sw. Zool. Ill. ii. pl. 47.

*Blechropus*, Sw. Bill short, triangular, somewhat conic, but depressed. Culmen obsolete. Nostrils round, pierced in the substance of the bill. Wings moderate; the third quill longest. Feet small, weak. — *N.B.* The bill much resembles that of *Pachycephala*. Plumage more or less black. *Pepoaza* Azara.

No species figured.

SEISURA, H. and V. Bill lengthened, much depressed,



with an elevated straight culmen; near the tip compressed. Wings long; the first quill spurious; the fourth and fifth longest. Tail lengthened; the sides rounded. Feet moderate, slender, resembling those of *Muscipeta*. Inner toe shortest; outer toe connected to the middle at the base. Gape with short bristles. Australia.

*S. volitans*. Lin. Tr. xv. 250

**PERSPICILLA**, Sw. Bill long, compressed on the sides. Nostrils naked. Wings rounded, broad; the scapular quills as long as the primary quills. Tarsi very long, smooth. Tail rather short. S. America.

*P. leucoptera*. Sw. See cut in Vol. I. p. 30.

SUBFAM. MUSCICAPINÆ. *Flycatchers*.

Feet weak, formed only for perching, generally short (except in *Todus*), but always very slender, and often syndactyle. Bill more or less depressed. Gape with stiff bristles. Claws small, considerably curved. Lateral toes unequal. Inhabits warm and tropical latitudes; but excluded from North America.

**RHIPIDURA**, Horsfield and Vigors. Head very large. Tail long, broad, fan-shaped, much rounded. Bill small, short, the sides considerably compressed: the bristles of the gape as long, and sometimes longer, than the bill. Wings moderate; the first quill spurious, half as long as the second; fourth and fifth longest. Feet slender. Australia, Java, and Indian Islands.

*R. flabellifera*. Lin. Tr. xv. 247.

**MONACHA**, H. and V. Bill large, thick. Culmen elevated, and curved from the base; the tip abruptly hooked and strongly notched: under mandible thick, with the gonys ascending. Gape strongly bristled.

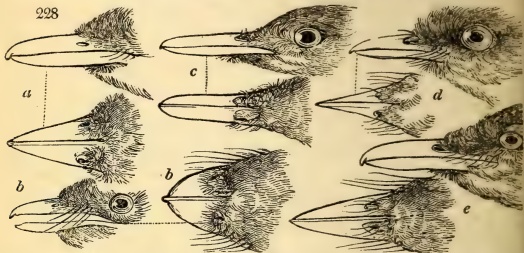
*M. carinata*. Z. I. i. pl. 147. *niger*. Pl. Col. 430. f. 1.  
*velata*. Pl. Col. 337. *telasophthalmus*. Lesson.  
*cinerascens*. Ib. 430. f. 2. *Voy. pl. 18. f. 1.*  
*trivergata*. Ib. 418. f. 1. *chrysomela*. Ib. pl. 18. f. 2.

**MEGALOPHUS**, Sw. Bill large, very thin, wide towards

the base. Culmen depressed its whole length ; tip abruptly hooked. Feet pale.

*M. regius*. Braz. Birds, ii. pl. 51, 52.

**Todus**. (*fig. 228.*) Feet very weak. Tarsi lengthened, slender, considerably longer than the hind toe and claw. Anterior toes short ; lateral toes unequal, more or less united at their base. Bill broad, typically lengthened, boat-shaped, thin, contracting suddenly at the tip, which is gradually hooked. Wings and tail very short, rounded ; the latter very slender. The following appear to be subgeneric types.



*Conopophaga*, Vieil. (*fig. 228. a*) Head very large. Tail excessively short. Bill short, gradually narrowing to the tip. Gonys ascending : front with setaceous plumes, but without bristles. Feet and toes long and slender ; the inner shortest ; the outer united as far as the first joint.

*C. ruficeps*. B. B. ii. pl. 72. *collaris*. B. B. ii. pl. 74.

*Platyrrhynchus*, Desm. (*fig. 228. b*) Bill very short, broad, and weak ; the sides dilated : under mandible very weak and flat. Bristles at the gape longer than the bill. Tail and wings as in *Conopophaga*. Feet small. Tarsi and toes very slender ; the latter short and syndactyle ; lateral toes unequal.

*Todus*, Lin. (*fig. 228. c*) Bill lengthened, broad throughout, contracting suddenly at the tip, very flat. Bristles short, weak, or none. Tail short, very slender, rounded. Legs long, weak. Toes short ; the

outer more or less united to the middle toe. Tropical America only.

*T. viridis*. Lin. Zool. Ill. ii. pl. 66.

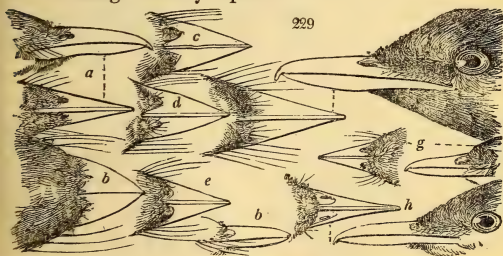
*Lepturus*, Sw. (fig. 228. d) Bill triangular, gradually narrowed from the base, culminated. Wings excessively small, and very much rounded; the lesser quills being nearly as long as the primaries. Tail lengthened, very slender. Feet large, much developed. Claws slender, and but slightly curved.

*L. fulviceps*. Braz. Birds.

*Platystera*, Jard. Selby. (fig. 228. e) Bill somewhat lengthened, boat-shaped: culmen sharp. Wings moderate, rounded; the first quill almost spurious. Tail broad, short; the sides rounded. Tarsi lengthened. Africa only.

*P. lobata*. Ill. of Orn. i. pl. 9.

**MUSCICAPA**, Linn. (fig. 229.) Feet very small. Tarsi short, not much longer than the hind toe and claw (except in *Muscicapa* proper). Bill broad at the base, gradually narrowing towards the tip, where it is compressed on the sides; the tip abruptly hooked. Wings and tail somewhat lengthened and rounded, but both fully developed; the first quill of the wing is always spurious.



\* *Cryptolopha*, Sw. (fig. 229. a) Bill short, triangular, resembling that of *Lepturus*. Rictus with lengthened

\* We propose substituting this name for *Seicircus*, used in the former part of this volume, to avoid any confusion of this group with those of *Seisura* and *Seiurus*.

bristles. Wings moderate; the first quill short, spurious, and only half as long as the second; the third shorter than the fourth. Tail moderate, rounded; the tips suddenly narrowed and mucronate. Tarsus lengthened, slender, nearly twice the length of the hind toe. Lateral scales entire. India only?

*C. auricapilla.* Part 5. No. 186.

*Muscipeta*, Cuv. (*fig. 229. f*) Bill large, rather lengthened, broad at the base, and gradually narrowed to the tip. Feet short, weak. Lateral toes unequal. Wings moderate; the three first quills graduated. Tail rather long, rounded, graduated, or cuneated.

*M. rufiventer.* West. Af. ii. Paradisea. Auct.

*Myiagra*, Horsf. Vig. (*fig. 229. b, c, d, e*) Bill large, short, broad, suddenly narrowed at the tip. Wings and feet as in *Muscipeta*. Tail moderate, even.

*M. plumbea.* Lin. Tr. xv. 254.

*Muscicapa*, Lin. (*fig. 229. g*) Bill smaller, triangular, and not much dilated at the base. Wings more pointed; the first quill very small and spurious; the second not much shorter than the third and fourth, which are the longest. Tail rather short or moderate, even, or slightly forked. Feet stronger than in the two preceding types. The tarsus and the middle toe lengthened; inner toe almost as long as the outer.

*M. grisola.* Selby, 43\*. f. 1. (*g*) *luctuosa.* Selby, 43\*. f. 2, 3.

*Hyliota*, Sw. (*fig. 229. h*) Bill lengthened, very slightly widened at the base, and much compressed beyond the nostrils. Rictus nearly smooth. Wings, tail, and feet as in *Muscicapa*; but the middle toe is shorter, and the claws are broader, thicker, and much more curved. Africa: representing *Platystera*.

*H. flavigaster.* West. Af. ii.

SUBFAM. EURYLAIMINÆ. *Broad-Bills.*

Size large. Structure powerful. Bill short, excessively broad: the upper mandible convex above, dilated at

its base, and the margins folding over those of the under mandible: the tip abruptly hooked. Wings rather short. Feet strong, moderate. The outer toe connected for half its length to the middle toe; hinder toe long; inner toe shortest.

**EURLYLAIMUS**, Horsf. (*fig. 144. p. 81.*) Bill broader than the head: under mandible very thin, particularly at the base. Nostrils basal, transverse, oval; the aperture naked. First quill slightly, second almost imperceptibly, graduated. Tail short, rounded. The pre-eminent type.

E. Horsfieldi. Pl. Col. 130, 31. Sumatranus. Ib. 297.  
ochromalus. Ib. 261.

**CYMBIRYNCHUS**, Vigors. Bill thicker, subconic, and more powerful; the base with a thickened margin: under mandible strong, equally deep with the upper. Gonys angulated and ascending. Nostrils naked, placed in the middle of the bill. Tail rather lengthened, graduated. The subtypical type.

C. nasutus. Pl. Col. 154.

**PLATYSTOMUS**, Sw.\* Bill as broad as the head; the base encircled by a thickened margin: the cutting edge of the upper mandible not dilated or folding over that of the under. Rictus strongly bristled. Nostrils basal, oblong, naked, and without a membrane. Wings lengthened, pointed; the outer quills graduated; the fourth and fifth quills equal, and longest. Tail moderate, forked. Feet as in *Eurylaimus*, but the tarsus is shorter. The fissirostral type.

P. Blainvillii. Less. Voy. Coq. pl. 19. f. 2.

**PSARISOMUS**, Sw.† General structure of *Eurylaimus*; but the bill is small, and only of an ordinary size. Tail rather lengthened.

P. Dalhousiæ. Wilson. Ill. of Zool. ?

\* M. Lesson places this and *Cymbirynchus*, in his genus *Erolla*.

† Never having seen a specimen, I can only judge of this remarkable type by the figure in Dr. Royle's work on Hymalayan Natural History. Its striking resemblance to a *Psaris*, and the smallness of its bill, makes me conclude it is the most aberrant, or tenuirostral type.

**SERILOPHUS**, Sw. Bill smaller. Head with a procumbent crest of silky feathers. Nostrils as in *Eurylaimus*. Rictus smooth. Wings moderate; lesser quills emarginate at the tips. Tail short, rounded; the tips of the feathers, together with those of the four first primaries, terminated in soft slender points. The rasorial type.\*

*S. lunulatus.* Zool. Tr. i. pl. 25.

## TRIBE II. CONIROSTRES.

Bill more or less conic; slightly notched.

### FAMILY CORVIDÆ. *Crows.*

Size large. Bill thick, strong; the upper mandible with a very slight notch. Nostrils covered or defended by incumbent bristles or feathers. Feet strong.

#### SUBFAM. CORVINÆ. *Typical Crows.*

Stature large. Form robust. Feet formed for walking: the lateral toes of equal length. Wings lengthened, pointed.

**CORVUS**, Linn. Bill somewhat lengthened, strong: tip of the upper mandible slightly inflexed over the lower; obsoletely, or not at all notched: culmen elevated, and slightly curved from the base. Nostrils covered and concealed by stiff, lengthened, incumbent bristles. Wings long, pointed; the first, second, and third quills graduated. Tail various.



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*C. corone.* Selby, pl. 28.

**Pica**. Brisson. *Magpie.* Tail lengthened, and considerably graduated.

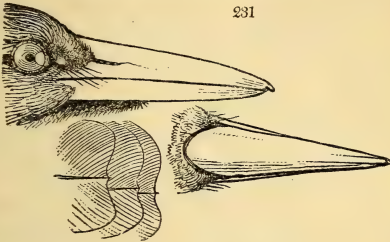
*Corvus pica.* Selby, pl. 31. f. 2.

\* It is by this beautiful type, and *Megalaphus regius*, that I consider the *Eurylaiminæ* and the *Muscicapinæ* are united.

*Nucifraga*. Brisson. *Nutcracker*. Bill perfectly straight, and conic; the base dilated, and dividing the frontal feathers.

*guttata*. Vieil. Selby, pl. 33 \*. *hemispila*. Gould, C. pl. 36.

BARITA, CUV. *Shrike-Crows*. Bill very straight, compressed, lengthened; the culmen not curved; the tip



only bent down, with a distinct notch or tooth in the upper mandible. Frontal base of the bill thick, broad, and dividing the frontal feathers. Nostrils naked, linear, pierced in the solid substance of the bill. Outer toe connected to the middle nearly as far as the first joint. Feet strong, robust, formed for walking. Lateral toes almost equal.

*Tibicen*. Freyc. Voy. pl. 20. *graculina*. White, Voy. pl. 36.

*Vanga*, Buffon. Tip of the upper mandible forming an abrupt hook, and armed with a prominent tooth. Rictus strongly bristled. Wings pointed; the two first quills graduated; the primaries considerably longer than the secondaries and tertials. Tarsi rather short. Middle and hinder toe of equal length; inner toe much shorter than the outer, which is connected to the middle toe. Claws much curved, very acute. Tail even.

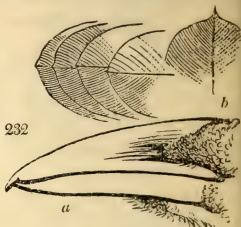
*V. destructor*. Tem. Pl. Col. 273.

*Platylophus*, Sw. Bill intermediate in form between *Vanga* and *Garrulus*. Culmen slightly curved: gonys

ascending, curved. Front of the head and nostrils defended with stiff setaceous feathers. Nostrils oval, basal. Rictus bearded. Wings rounded; the primaries not much longer than the scapulars. Tail rounded, terminating in setaceous points. Feet moderate. Hinder toe and claw very strong; longer than the middle, which is short; lateral toes equal. Claws acute.

*P. galericulatus*. N. Zool. ii. 482.

**PHONYGAMA**, Lesson (*fig. 232*.) Bill large, strong, considerably compressed; very high at the base, gradually narrowing towards the end; the front advancing on the crown of the head, and considerably dividing the frontal plumes: upper mandible distinctly notched. (*a*) Nostrils very large, placed in a deep depression of the bill; the aperture large, oval. Frontal feathers short, reflected forwards. Wings —? Tail moderate, rounded; the feathers broad, truncate, and ending in setaceous points. (*b*)



*P. Lessonia*. Less. Voy. pl. 13. *chalybea*. Pl. Enl. 634.

SUBFAM. GARRULINÆ. *Jays*.

Stature smaller. Structure less robust. Feet formed for grasping. The lateral toes unequal. Wings shorter, more rounded. Colours bright.

**GARRULUS**, Willughby. (*fig. 233*.) Bill with the gonyes as much curved towards the tip as is the culmen; commissure straight. Tip of the upper mandible distinctly notched, and rather suddenly bent over the lower. Nostrils hidden by incumbent bristles. Wings moderate, rounded; the





four first quills graduated. Tail rounded; the tips mucronate. Legs moderate; the inner toe and claw shorter than the outer.

G. glandarius. Selby, pl. 32. lanceolatus. Gould's Cent.  
bispecularis. Ib. p. 38. pl. 39.

CYANURUS, Sw. (*fig.* 234.) Feet black, and very large.

The lateral toes typically equal. Nostrils partially hid by the frontal plumes, which are directed forwards. Bill crow-like; the



notch almost or quite obsolete on the upper mandible, and the tip not suddenly bent over the lower. Culmen more arched than the gonys; commissure curved. Wings and tail rounded; the tips of the latter not mucronated.

cristatus. Wilson, pl. 1. f. 1.

Stelleri. N. Zool. ii. pl. 54.

sordidus. Zool. Ill. ii. pl. 86.

crisatellus. Pl. Col. 193.

erythrorynchus. Gould's

Cent. pl. 41.

Floridanus. Bon. Am. Orn.

coronatus. Ill. of Orn. 64.

cyanopogon. Pl. Col. 169.

pileatus. Ib. 58.

azureus. Ib. 168.

formosus. Ib. 436.

DYSORNITHIA, Sw. Bill very short, conic; the base wide, the sides compressed, the tip slightly bent and notched. Gonys ascending. Rictus with stiff bristles, half the length of the bill. Nostrils concealed by incumbent feathers. Tail moderate, graduated. Tarsi moderate. Inner toe shortest. Claw of the hind toe but slightly curved. Feathers of the back very long and soft.

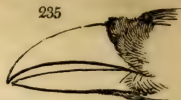
D. Canadensis. Wilson, 20. f. 1. brachyrynchus. N. Zool. ii.

infaustus. M. Carls. pl. 76. pl. 55.

#### SUBFAM. GLAUCOPINÆ. *Wattle Crows.*

Bill short; the culmen elevated, and curved from the base; the upper mandible entire; the gonys straight; the commissure considerably curved. Rictus smooth. Wings short, rounded. Tail lengthened, graduated, or cuneated.

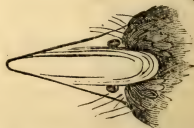
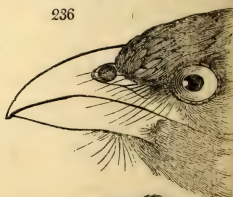
**CRYPsirina**, Vieillot. (*fig. 235.*) Bill shorter than the head, much compressed; the culmen considerably arched, and curved from the base. Nostrils small, basal, concealed by incumbent feathers, which are either soft or setaceous. Wings short, much rounded; the primaries hardly longer than the secondaries. Tail feathers broad and obtuse. Feet moderate, arboreal. The middle toe and claw short, but as long as the tarsus; lateral toes unequal; hind toe and claw shorter than the tarsus. India. *rufa*. Ois. d'Af. pl. 59. *vagabonda*. Gould's Cent. leucoptera. Pl. Col. 265. pl. 42. *temnura*. Ib. 337. *Sinensis*. Gould, C. pl. 43. *leucogastra*. Zool. Tr. pl. 12. *temia*. V. G. pl. 106. (*fig. 235.*)



**PTILOSTOMUS**, Sw. Bill as in *Crypsirina*. Rictus bristled. Wings moderate, slightly rounded; the third, fourth, and fifth quills longest. Tail long, cuneated; the feathers lanceolate. Feet very strong and robust. Tarsus lengthened, longer than the middle toe and claw: lateral toes short, and of equal length. Africa.

*P. Senegalensis*. West. Af. i. p. 135. Ois. d'Af. pl. 54.

**BRACHYSTOMA**, Sw. (*fig. 236.*) Bill very short, entire, resembling *Glaucopis*: the culmen elevated, convex, and considerably dividing the frontal feathers: commissure curved, and somewhat angulated in the middle: under mandible slightly ascending. Nostrils basal, naked; the aperture large and round. Wings and tail moderate, rounded; the latter with broad obtuse feathers. Feet arboreal: the middle toe much shorter than the tarsus,



and but slightly longer than the hind toe; lateral toes unequal, the inner shortest. Claws strong, and much curved. Australia.

*B. cinerea.* Part 5. No. 51.

**GLAUCOPIS**, Forster. Bill short, strong, robust: the culmen elevated and curved from the base: upper mandible destitute of a notch; under mandible straight (on the gonys), the margin covered by that of the upper, and furnished at the base with two fleshy wattles. Nostrils basal, lateral, partly closed by a large membrane. Feet very strong, formed for walking. The tarsus longer than the middle toe: lateral toes short, of equal length, and divided to their base; hind toe strong, armed with long curved claw. Wings short. Tail rather lengthened, rounded; the feathers ending in setaceous points.\* Pacific Islands.

*G. cinerea.* Gm. Voy. Astrolobe. Ois. pl. 15.

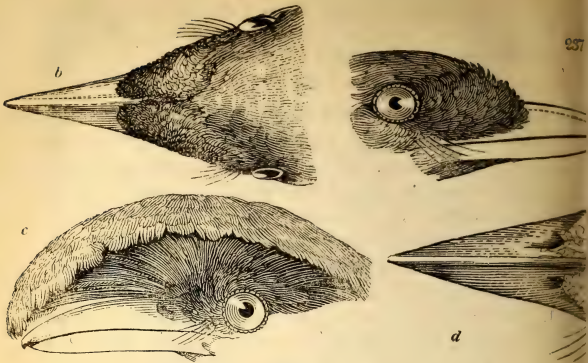
SUBFAM. CORACINÆ. *Fruit Crows.*

Bill thick, strong, hard, angulated, straight, depressed and widened at its base, compressed beyond: the culmen slightly bent towards the end: the tip of the upper mandible slightly, or not at all notched; inferior mandible with the gonys straight and flattened. Gape with a few strong bristles. Nostrils basal, round, open in front, and either partially or entirely covered with feathers directed forwards. Feet short, strong, arbo-real. The tarsus shorter than the middle toe: the three anterior toes nearly of the same length; the lateral ones slightly connected at their base to the middle toe. Wings long; the third, fourth, and fifth quills longest. Tail short. South America only.

**CORACINA**, Vieillot. (*fig. 237. a, b*) Front and base of the bill protected by short thick-set feathers.

*C. scutata.* Pl. Col. 40.

\* Some of these characters, not inserted in my own notes, rest on the authority of the *Manuel d'Ornith.* i. Analyse, p. 51.



**CEPHALOPTERUS**, Geoffroy St. Hilaire. (*fig. 237. c*)  
General structure of *Coracina*, but with an enlarged crest on the head, which advances in front, and overshadows the bill.

*C. ornatus*. Pl. Col. 255.

**GYMNOCEPHALUS**, Geoff. (*fig. 237. d*) Head and base of the bill entirely naked.

*G. calvus*. Le Vaill. Ois. de l'Am. pl. 49.

**SUBFAM. FRIGILINÆ.\***

Bill rather lengthened, slender, tapering to a point, subfalcate, and more or less arched.

Notch of the upper mandible obsolete. Nostrils basal, lateral, oval, open, entirely concealed by having the frontal feathers

directed forwards. Feet strong, robust. The length of the tarsus variable. Wings long, somewhat pointed; but the three first quills graduated; the fourth and fifth being longest.

*F. pyrrhocorax*. Pl. Enl. 531. *erythropus*. Pl. Enl. 255.

\* This subfamily at present contains but two European birds, which almost appear to be types of as many genera; the above characters are more strictly applicable to the first.

FAMILY STURNIDÆ. *Starlings.*

Size smaller. Stature less robust. Bill angulated at the base ; the upper mandible entire. Lateral toes equal.

SUBFAM. STURNINÆ. *Typical Starlings.*

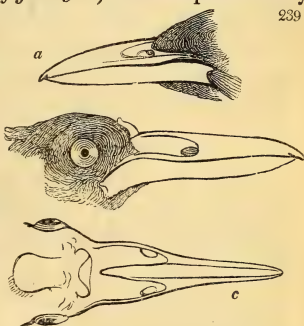
Bill in the form of a lengthened cone ; longer than the head : the commissure with an acute angle at the base.

STURNUS, Lin. Bill depressed from the base as far as the tip, which is slightly inflexed, and obsoletely notched. Culmen convex and rounded. Wings lengthened, pointed ; the first quill minute and spurious ; the second and third longest. Tail short, divaricated. Feet moderate, terrestrial. The lateral toes equal ; the middle toe as long as the tarsus ; hinder toe shorter. The conirostral type.

*S. vulgaris.* Selby, pl. 36. f. 1.

PASTOR, Temminck. (*fig. 239. a*) Bill depressed only at the base, com-

pressed beyond ; culmen slightly bent. Tip of the upper mandible deeply notched. Commissure distinctly angulated at the base. Nostrils large, feathered. Wings moderate in length, ample in breadth ; first quill



very minute ; the second nearly equal to the third. Tail short, broad, rounded. Feet very large and strong. Middle toe as long as the tarsus ; hinder shorter ; lateral toes equal. Claws somewhat slender, acute, but not much curved. Warm latitudes of the Old World. The dentirostral type.

*P. roseus.* Selby, pl. 36. f. 2.

GRACULA, Auct. Bill short, stout, not so long as the

head ; entirely compressed. Frontal feathers advancing far upon the base, but not dividing the front. Culmen gradually curved from the base to the tip, which is distinctly



notched. Commissure but slightly angulated. Under mandible with the base broad and dilated. Nostrils basal, naked, round, sunk in a depression. Frontal feathers short, velvety. Head with naked wattles. Wings as in *Pastor*. Tail short, even. Feet rather short, very strong. Tarsus and middle toe equal ; hinder toe shorter ; inner toe almost equal to the outer toe. India. The fissirostral type.

*G. religiosa*. Pl. Enl. 268. Dumonti. Lesson. Voy. pl. 26.

**ACRIDOTHERES**, Vieill. General structure of *Pastor* ; but the whole of the head is entirely naked, and furnished with fleshy crests and wattles. Nostrils large, naked. Feet moderate. Tail even. Bill very wide at the base. (*fig. 239. b, c*) The tenuirostral type.

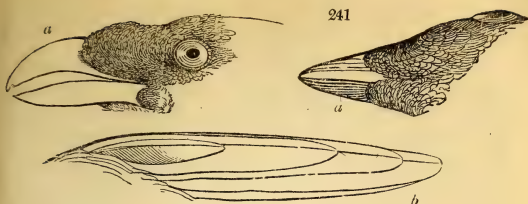
*A. carunculatus*. O. d' Af. pl. 93, 94.

**OXYSTOMUS**, Sw. Bill much lengthened, longer than the head ; the sides compressed. Culmen flattened, nearly straight, and angulated on each side ; the base advancing very far upon the head, and dividing the frontal feathers. Nostrils placed in a large depression towards the base of the bill. Wings very short, and considerably rounded. Tail moderate, rounded ; all the feathers, and the secondary quills, ending in setaceous points. Legs long, and robust. Tarsus much longer than the middle toe : lateral toes unequal, the inner shortest. Pacific Islands. The scansorial type.

*O. carunculatus*. Lath. G. Hist. pl. 79.

SUBFAM. LAMPROTORNINÆ. *Grakles*.

Bill thrush-like, compressed ; the culmen curved from the base. Lateral toes unequal.



**PTILONORYNCHUS**, Kuhl. (*fig. 241.*) Size large. Bill short, very thick, convex above (*a a*): both mandibles distinctly notched. Nostrils placed half-way between the gape and the tip, partly concealed by the short thick-set feathers of the front, which lie on the basal half of the bill. Wings rather short, rounded; the first and second quills graduated; the third shorter than the fourth and fifth, which are longest (*b*). Tail moderate; the feathers broad, their tips truncated. Feet ambulating, large, and very strong. Middle toe and tarsus of equal length; hinder toe very strong, but much shorter; lateral toes unequal, the outer longest, and united to the middle as far as the first joint. Australia.

*P. holosericeus.* Pl. Col. 395. 422.



**LAMPROTORNIS**, Temminck. *Grakle.* (*fig. 242.*) Bill thrush-like, compressed its whole length. Culmen curved from the base to the tip. Upper mandible notched. Commissure slightly curved. Nostrils midway between the tip and the gape, naked, but with the frontal feathers reaching to their base. Wings

long, ample; the first quill spurious; the third, fourth, and fifth of equal length, and longest. Tail short, even, rounded, or (as in the rasorial type (*b*)) considerably lengthened, and cuneated. Feet very large and strong. Middle toe and tarsus equal; hinder toe strong, but much shorter; lateral toes unequal.

- L. ptilonynchus*. West. *rufipennis*. Ois. d' Af. pl. 83, Af. i. 140. (*fig.* 242. *a*) 84. (*b*)  
*chrysonotis*. Ib. i. pl. 6. *albiventris*. Part 5. No. 53.  
*cyanotis*. Ib. i. 146. (*c*) *fulvipennis*. Part 5. No. 54.  
*rufiventris*. Ib. i. 151. *melanogaster*. Part 5. No. 52.  
*leucogaster*. Ib. i. pl. 8. *longicauda*. W. Af. i. pl. 7. (*b*)

SUBFAM. SCAPHIDURINÆ. *Boat-Tails*.

Bill of a very lengthened conic shape, entire, and compressed: the culmen slightly curved. Tail graduated, the sides reflected upwards, or boat-shaped. Feet strong.

ASTRAPIA, Vieillot. General structure of *Lamprotor-nis*; but the tail excessively long and boat-shaped.\*

*A. gularis*. Vieil. Gal. pl. 107.

SCAPHIDURA, Sw. Bill longer than the head, conic. Both mandibles equally thick. The base of the culmen broad, flattened, and advancing very far on the front of the head. Commissure angulated at the base, and sinuated on the sides. Nostrils basal, placed in a small triangular hollow on the sides: the membrane obsolete. Wings lengthened, pointed; the first quill longest. Tail moderate, graduated, boat-shaped. Feet strong. Middle toe and tarsus of equal length; hinder toe much shorter; inner toe hardly shorter than the outer. South America.

*S. barita*. Part 5. No. 62. *crassirostra*. Ib. No. 63.

QUISCALUS, Vieillot. Bill longer than the head, compressed. Both mandibles equally thick. Culmen slightly curved, and compressed from the base, where it simply divides the frontal feathers, without being

\* Not having a specimen of this excessively valuable bird to examine, I am unable to add its full characters: and nothing essential can be learned from M. Vieillot's definition.



dilated. Commissure considerably sinuated. Nostrils basal, naked; the aperture round. Wings moderate, somewhat pointed; the two first quills slightly shorter than the third and fourth, which are the longest. Tail rather lengthened, much graduated, boat-shaped; tips of the lateral feathers truncated. Feet large, strong. Middle toe and tarsus equal; hinder toe shorter; inner toe scarcely shorter than the outer. America.

Q. *versicolor*. Part 5. No. 55. *tenuirostris*. Part 5. No. 58.  
*purpuratus*. Ib. No. 56. *macrourus*. Ib. No. 59.  
*lugubris*. Ib. No. 57. *corvinus*. Ib. No. 60.  
*inflexirostris*. Ib. No. 61.

SCOLECOPHAGUS, Sw. Bill shorter than the head, straight, slender; the margins inflexed, but not sinuated. Wings moderate, pointed; the first quill rather shorter than the second. Tail divaricated, flat, and slightly rounded. Legs lengthened, slender, formed for walking. Middle toe and tarsus of equal length; hinder toe shorter; lateral toes of equal length. Claws slender, acute, slightly curved.

S. *ferrugineus*. Wilson, 21. f. 3. *minor*. Part 5. No. 65.  
*Mexicanus*. Part 5. No. 66. *sericeus*. Ib. No. 64.

SUBFAM. ICTERINÆ. *Hangnests*.

Bill completely conic, entire, rather shorter than the head, either straight, or with both mandibles slightly bent. Feet formed for grasping: the claws thick, broad, and much curved.

CASSICUS, Daudin. *Cassicans*. Bill rather longer than the head; the base thick, very convex, and enlarged into a broad oval plate, which advances very far on the front, and divides the frontal feathers. Nostrils oval, naked, basal, pierced in the solid substance of the bill, and close to the margin of the upper mandible. Commissure straight, but angulated at the base. Wings rather long; the first and second quills graduated. Tail graduated. Feet short, very strong.

Hind toe and claw nearly as long as the tarsus. Tropical America.

*C. cristatus*. Br. Birds, pl. 32. *icteronotus*. Br. Birds, pl. 3.  
*hæmorrhous*. Ib. pl. 1. *nigerrimus*. Ib. pl. 4.  
*affinis*. Ib. pl. 2. *coronatus*. Ill. Or. 45.

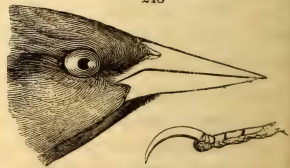
**ZANTHORNIS**, Cuv. Bill not longer than the head, generally shorter; perfectly straight; the culmen not dilated at the base, but simply dividing the frontal feathers. Wings moderate, pointed; the first three or four quills generally or nearly equal. Tail moderate, rounded. Feet moderate, but with the hinder toe manifestly longer than the tarsus; lateral toes unequal. America.

*Z. Baltimorii*. Wils. pl. 1. f. 3.

**ICTERUS**, Cuv. Bill somewhat lengthened, as long as the head, or longer: both mandibles slightly curved, and considerably attenuated. Nostrils basal, rather large, covered above by a membrane; the aperture lateral and oval. Wings moderate; the first and second quills rather shorter than the third. Tail somewhat lengthened, graduated. Feet moderate. Inner toe shorter than the outer; hinder toe shorter than the tarsus.

*I. castaneus*. Wils. pl. 4. f. 1—4. *tibialis*. Part 5. No. 67.

**CHRYSOMUS**, Sw. (*fig. 243.*) Bill resembling *Zanthornis*; but the margin of both mandibles inflexed. Wings moderate; the first quill rather shorter than the second. Tail rounded. Feet formed for walking. Toes large, very long, and slender: middle toe longer than the tarsus; lateral toes equal; hinder toe shorter than the tarsus. Claws long, very slender, and but slightly curved.



*icterocephalus*. Edw. pl. 323. *zanthopygius*. Part 5. No. 190.

SUBFAM. AGLAINÆ. *Maizers.*

Bill short, thick, entire, completely conic, sometimes depressed, and rounded at the tip. Culmen rather broad, and flattened at the base. Legs long, slender, formed for walking.

**DOLICHONYX**, Sw. Bill very short, finch-like, conic, entire, shorter than the head; the commissure sinuated. Wings pointed; the first and second quills longest, and nearly equal. Tail slightly graduated, subscansorial; the tips acuminate, and somewhat rigid. Legs long, slender. Middle toe longer than the tarsus; lateral toes unequal, the inner longest; hind toe of equal length with the tarsus. Claws long, very slender, and slightly curved.

*D. oryzivora.* Wils. 12. f. 1, 2.

**AGELAIUS**, Vieillot. Bill short, very conic, entire; the tips compressed; the culmen flattened towards the base; sides of the mandibles inflexed. Wings lengthened; the two first quills longest. Tail slightly rounded. Legs long, slender. Middle toe nearly as long as the tarsus; lateral toes equal; hinder toe not so long as the tarsus. Claws long, very slender, and but slightly curved. America.

*A. phœnicæ.* Wils. pl. 30. f. 1. *pustulatus.* Part. 5. No. 70.  
*ruficollis.* Part 5. No. 68. *xanthocephalus.* Bon. Orn.  
*sulcirostris.* Ib. No. 69. pl. 3. f. 1. 2.

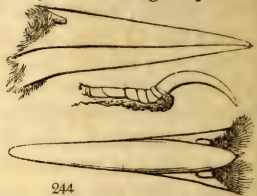
**LEÏSTES**, Vigors. Bill lengthened, conic, very straight; the culmen depressed from the base to the tip, which is flattened. Wings moderate; the first quill rather shorter than the three next, which are the longest. Tail rounded. Legs large, strong. Middle toe longer than the tarsus; hinder toe shorter; lateral toes unequal, the outer one shortest. Anterior claws slender, and but slightly curved; the outer one smaller than the inner; hinder claw much stronger and more curved than the middle one.

*L. erythrocephalus.* Zool. Miss. *tenuirostris.* Part 5. No. 73.  
 i. pl. 36. *niger.* Ib. No. 74.  
*oriolides.* Part 5. No. 71. *unicolor.* Ib. No. 71.  
*brevirostris.* Ib. No. 72.

**MOLOTHRUS**, Sw. *Cowpen*. Bill very short, thick, finch-like, conic, entire; the culmen not flattened, but slightly arched from the base, which is rather elevated. Wings lengthened, pointed; the first quill longest. Tail slightly rounded. Middle toe as long as the tarsus; lateral toes of equal length; hind toe shorter than the tarsus. All the claws rather small, and fully curved.

*M. pecoris*. Wilson, pl. 18. *brevirostris*. Part 5. No. 76. f. 1—3.

**STURNELLA**, Vieillot. (*fig. 244.*) Bill long, equal to the length of the head, conic, much depressed towards the tip, where it is broader than high: culmen dividing the frontal feathers, where it is depressed and flattened



Wings moderate; first quill rather shorter than the second. Tail short, rounded; the feathers rather narrow. Feet large, but slender. Tarsus longer than the middle toe. Lateral toes unequal, the inner shortest; hind toe not much shorter than the middle. Anterior claws small, and of equal size; hinder claw (typically) twice as large as the others.

*S. collaris*. Veill. Wilson, *militaris*. Pl. Enl. 113. pl. 19. f. 2. (*fig. 244.*)

#### FAMILY FRINGILLIDÆ. *Finches.*

Size generally small. Bill more or less short and conic, not so long as the head, and very thick at its base.

##### SUBFAM. COCCOTHAUSTINÆ. *Hard-Bills.*

Bill pre-eminently large, strong, and conic; the curvature of both mandibles towards the point being more or less equal: the culmen rarely arched, or bent down at the tip. Upper mandible either entire, or with a very slight and almost obsolete notch.

**COCCOTHRAUSTES.** Size moderate. Bill very conic. Wings without a small spurious quill.

*Pyrenestes*, Sw. Bill enormous, perfectly conic; the two mandibles equal, or the lower somewhat thicker: upper mandible with an obsolete tooth at its base; the tip entire; the commissure straight. Wings and tail rounded; first quill very small, spurious. The Old World.

*P. sanguinea*. W. Af. i. pl. 9. *frontalis*. Part 5. No. 116.

*Coccororus*, Sw. (*fig. 245.*) Bill very large, almost

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perfectly conic; the two mandibles equal; the upper sinuated in the middle, the tip rather exceeding that of the lower, and with a very slight notch: commissure sinuated. Wings and tail more or less rounded; the first quill nearly as long as the second. America only.

*C. cærulea*. Wilson, pl. 24. f. 6.

*Coccothraustes*, Briss. Bill very large, rather imperfectly conic; the upper mandible much thicker than the under; the tip entire; the commissure simply arched, without undulations. Wings long; the first, second, and third quills nearly equal. Tail short, more or less forked. Northern America, Europe, and temperate Asia.

*C. Europæus*. Selby, pl. 55. f. 1. *vespertina*. N. Z. ii. pl. 68.

*Spermophaga*, Sw. Bill moderate, conic, but rather lengthened; upper mandible thicker than the under; the tip entire; the commissure sinuated. Wings and tail much rounded; the first quill fully developed, but only half as long as the fifth. Africa.

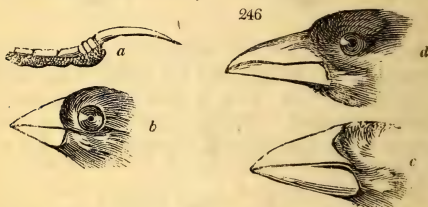
*S. cyanorynchus*. West. Af. i. 164. Vieil. Ois. Chant. pl. 67, 68.

*Dertroides*, Sw. Bill lengthened, conic, compressed: the basal part of the culmen swollen, elevated, and advancing on the front of the head; the rest slightly curved. Nostrils entirely naked, basal, pierced in the naked substance of the bill. Commissure sinuated. Under mandible thinner than the upper. Wings and tail round; first quill spurious, but half as long as the second. Feet strong. Lateral toes equal.

*D. albirostris*. West. Af. i. 163. Pl. Col. 446.

**PLOCEUS.** *Weavers*. Size small. Bill conic, but with the the culmen slightly bent, and the tip entire. Under mandible less thick than the upper. Claws large, very long. (*fig. 246. a*) Wings pointed; but the first quill remarkably short and spurious. The Old World only.

*Vidua*, Cuvier. (*fig. 246.*) Bill short. Wings length-



ened; the second, third, and two following quills longest, and of equal length. Tail boat-shaped: males with the two middle feathers excessively elongated, generally broad and convex.

*V. rufitorques*. W. Af. i. 174. (*c*) *chrysnotus*. W. Af. i. 174. (*d*)  
*erythrorhynchus*. Ib. (*b*) *paradisea*. Ib. pl. 11.

**Euplectes**, Swains. (*fig. 247.*) Bill shorter than the head.

Nostrils round, partly concealed by the frontal feathers. Wings short; the second quill shorter than the third; tertials as long as the primaries. Tail short, even, or very slightly rounded. Feet large, gracile. Toes very



long and slender; the lateral of equal length. Claws slender, very slightly curved. (c)

- E. ignicolor. Ois. Ch. pl. 59. melanogaster. Brown, Ill.  
 flammiceps. W. Af. i. pl. 13. pl. 24. f. 2.  
 oryx. O. Chant. pl. 66. albirostris. Part 5. No. 88.  
 sanguinirostris. Ib. pl. 22. lepidus. Ib. No. 89.  
 Capensis. P. E. 101. f. 1. flaviceps. Ib. No. 90.  
 (fig. 247.) Philippensis. Ib. No. 91.  
 rubra. Part 5. No. 87. aurinotus. Ib. No. 92.

*Ploceus*, Cuv. (fig. 247.) Bill considerably lengthened, as long as the head. Nostrils almost naked. Wings moderate; the second, third, fourth, and fifth quills nearly equal; tertials shorter than the primaries. Tail short, even. Feet large, thick. Toes robust; the lateral equal. Claws strong, thick, fully curved. (fig. 248.)



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- P. textor. Zool. Ill. ii. pl. 37. personatus. Part 5. No. 81.  
 brachypterus. West. Af. i. melanotis. Ib. No. 82.  
 pl. 10. flaviceps. Ib. No. 83.  
 cristatus. Part 5. No. 77. cucullatus. Ib. No. 84.  
 rubricollis. Ib. No. 78. ruficeps. Ib. No. 85.  
 niger. Ib. No. 79. erythrocephalus. Ib. No. 86.  
 aurantius. Ib. No. 80. auricapillus. Ib. No. 195.

*Symplectes*, Sw. (fig. 249.) General structure of *Ploceus*; but the bill is more compressed, the commissure curved, but neither sinuated nor toothed. Wings short, rounded; the first quill half as long as the second, which, with the third, is graduated; the three next are nearly equal, and are the longest. Tail moderate, even. Feet strong. The middle toe abbreviated; inner lateral toe shorter than the outer; hinder toe long, equal to the middle toe.



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S. chrysomus. West. Af. i. 170.

AMADINA, Swains. *Bengaly*. Size very small. Bill very short, conic. Wings pointed. Spurious quill minute.

Feet moderate, or small. Tropics of the Old World only : represented by *Tiaris* in America.

*Estrelda*, Sw. Bill small, moderate. Tail lengthened, graduated, or rounded. Feet moderate. Tarsus longer than the hallux.

*E. melanogaster*. W. Af. i. 194. *phœnicotis*. Ib. pl. 14.  
*cærulescens*. Ib. i. 195.

*Amadina*, Sw. Size larger. Bill short, very thick and broad at the base. Tail short, rounded, or even. Tarsus longer than the hallux.

*A. fasciata*. West. Af. i. pl. 15. *nitens*. Ib. i. 199.

*Spermestes*, Sw. Bill short, thick. Feet very large. Toes and claws long and slender. Tail short, even. Chiefly India.

*S. cucullata*. West. Af. i. 201.

*Erythura*, Sw. Bill thick, lengthened, resembling that of *Euplectes*. Tail very long, acuminate.

*E. viridis*. Pl. Col. 96.

*Pytelia*, Sw. Bill slender, conic, much lengthened. Tail short, even. Feet very small.

*P. phœnicoptera*. West. Af. i. pl. 16.

**TIARIS**, Swains. *Crestlet*. Bill perfectly conic, entire : commissure sinuated, and conspicuously angulated. Nostrils almost naked, round. Wings moderate ; first quill rather shorter than the second, third, and fourth, which are equal, and longest. Tail even, or slightly rounded. Feet moderate. Middle toe and tarsus of equal length ; lateral toes equal ; hinder toe much shorter than the tarsus. Claws small, fully curved. Head crested. South America only.

*T. ornatus*. Pl. Col. 208.

**CARDUELIS**, Briss. *Goldfinch*. Bill lengthened, conic, compressed ; the tip much attenuated and acute ; the gonys straight ; commissure slightly sinuated. Wings lengthened, pointed ; the first, second, and third quills nearly equal, and longest. Tail moderate, slightly forked. Feet short. Middle toe longer than the



tarsus, which is equal with the hind toe; lateral toes short, equal. Anterior claws small; hinder one long; all slender. Europe, Africa, America.

C. Europæus. Selby, pl. 55. f. 819. Americanus. Wils. pl. 1. f. 2.

**LINARIA**, Briss. Bill very short, conic, thick at the base; the sides of the upper mandible rather gibbous; the margins inflexed. Commissure not sinuated. Wings long, pointed. Tail forked. Feet short. Tarsus shorter than the middle toe. Lateral toes equal; hinder toe nearly as long as the tarsus.

*Linaria*. *Linnets*. Claws very slender, slightly curved, and much lengthened. The hinder toe of equal length with the claw.

*L. canabina*. Selby, i. pl. 55. f. 3. 4.

*Leucosticte*, Sw. Bill tumid. Commissure regularly curved. Wings much lengthened. Tarsus lengthened, slender. Hind claw very long.

*L. tephrocotis*. N. Z. pl. 50.

*Chloris*. *Greenfinch*. Bill larger and stronger: the commissure straight. Claws smaller, and more curved.

*C. flavigaster*. Selby, i. pl. 54. f. 3.

SUBFAM. TANAGRINÆ. *Tanagers*.

Bill unequally conic; the upper mandible more or less arched, and very distinctly notched. Feet formed for perching. Claws broad, and fully curved.

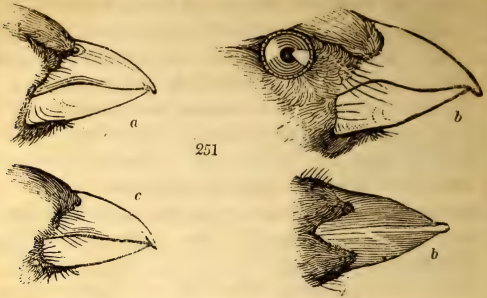
**TARDIVOLA**, Sw. Bill lengthened, conic, somewhat slender; the sides not gibbous; the commissure slightly or not at all sinuated. Wings very short; the first quill shorter than the four next, which are equal and longest. Tail lengthened, cuneated or graduated. Feet large. Tarsus and toes long. Outer toe rather shorter than the inner. Claws slender, slightly curved. (*fig.* 250.)



Outer toe rather shorter than the inner. Claws slender, slightly curved. (*fig.* 250.)

*T. sphenura*. Pl. Col. pl. 114. f. 2. (a)

**TANAGRA**, Linn. Bill very short, thick, strong ; the commissure slightly sinuated ; the sides swollen.

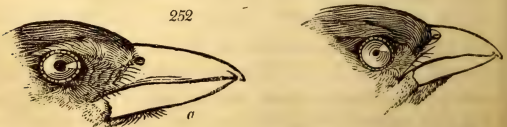


**Pitylus**, Cuvier. (fig. 251.) Bill very large, short, subconic. Mandibles equally thick: the upper mandible swelled on the sides ; the tip reflected, and distinctly notched ; the margin strongly sinuated in the middle. Wings short, rounded ; the three first quills slightly graduated ; the fourth and fifth equal, and rather longer than the third. Tail moderate, rounded. Feet moderate strong. Lateral toes equal ; hinder rather short. Tarsus and middle toes equal. Claws small, fully curved.



*P. picatus*. V. G. pl. 140. (d) *superciliosus*. Sw. sp. nov. (a)  
*atricollis*. Spix, ii. pl. 56. f. 2. *erythrorynchus*. Ill. of Orn.  
*capistratus*. Ib. ii. pl. 54. pl. 3. (b)  
 f. 1. (c)

**Tanagra**, Linn. (fig. 252, 253.) Size smaller. Bill not



swollen on the sides ; the commissure very slightly or not at all sinuated in the middle. Wings some-

what pointed ; the first and second quills scarcely shorter than the third, which is the longest. Tail moderate, even. Middle toe and tarsus of equal length ; lateral toes unequal, the inner shortest.\*

olivacea. Vieil. G.p.77. (fig. 252. a)  
serioptera. Part 5. No. 99.



*Ramphopsis*, Vieillot. (fig. 254.) Bill rather short : the under mandible more or less thicker at its base than the upper, and generally considerably dilated and flattened ; the margins inflexed. Commissure simply curved. Nostrils basal, partially naked ; the aperture round. Wings short ; the two first quills slightly graduated ; the third, fourth, and fifth equal, and longest. Tail much rounded. Feet slender, moderate. Tarsus and middle toe of equal length ; lateral toes the same. Claws slender, curved.



atrococcineus. B. Bds. pl. 20.      nigrogularis. Ib. pl.17.  
coccineus. Ib. pl. 18, 19.

*PHÆNISOMA*, Sw. Bill lengthened, conic. The upper mandible strongly sinuated or obsoletely toothed in the middle of the commissure.

*Lamprotes*, Sw. (fig. 255.) Bill lengthened, subconic, compressed from the base. Commissure simply curved. Gonyes straight. Culmen arched. Nostrils entirely naked ; the aperture round, simple. Wings rather lengthened, somewhat pointed ; the first quill hardly shortened ; the second longest. Feet very short. Tail even. Middle toe longer than the

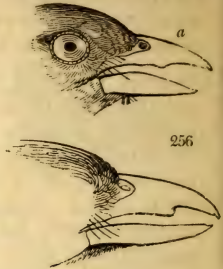


\* I find it impossible to determine, at this moment, which are the precise species of the other examples here figured of this intricate genus. They will, however, illustrate the forms between *Pitylus* and *Ramphopsis*, which is the most material object I have had in view.

tarsus ; lateral toes unequal ; hinder toe as long as the tarsus.

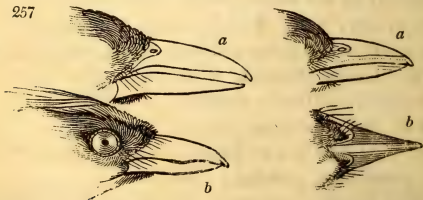
*L. rubrigularis.* Spix, ii. pl. 58. f. 1.

*Phœnisoma*, Sw. (*fig. 256.*) Bill lengthened, subconic, cylindrical, or sometimes with the base broader than high ; the tip reflected and notched : the margin of the upper mandible with an angulated or toothlike lobe in the middle, and folding over the edge of the lower mandible. Nostrils small, concealed by the short frontal feathers. Wings lengthened, and pointed ; the first quill hardly shorter than the second, which is the longest. Tail moderate, even, or slightly rounded. Feet very short. Middle toe longer than the tarsus ; inner toe rather shorter than the outer ; hind toe not quite so long as the tarsus. (*Pyrranga*, Vieillot.)



*P. rubra.* Wilson, pl. 11. f. 3. (*a*) *æstiva.* Ib. pl. 6. f. 3, 4.

*Tachyphonus*, Vieil. (*fig. 257.*) Bill lengthened, subconic ; the sides compressed ; the tip reflected and notched. Margins of both mandibles reflected inwards :



the commissure sinuated, and often toothed in the middle of the upper mandible. Wings moderate, rounded ; the third and fourth quills longest. Tail rather lengthened, rounded. Feet moderate, slender.

The middle toe and tarsus of equal length; lateral toes equal.\*

*nigerrimus*. Pl. Enl. 179. f. 2. (a)  
*cristatus*. Ib. 7. f. 2. (b)

*auricapillus*. Sw. Monog. (c)  
*phœnicus*. Part 5. No. 93.

*Leucopygia*, Sw. (fig. 258.)

Bill entire, neither mandible being notched; somewhat slender, much compressed. Commissure slightly or not at all sinuated. Rictus smooth. Nostrils naked.



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Wings moderate. Tail rounded. Feet very strong. Lateral toes equal. Claws fully curved.

*L. ruficollis*. Part 5. No. 97.

**NEMOSIA**, Vieillot. (fig. 259.) Bill slender, resembling that of a *Sylvia*, but stronger, more lengthened, and with the commissure very slightly sinuated: base of the under mandible as thick, and sometimes thicker, than that of the upper. Wings rather lengthened; the first quill hardly shorter than the three next, which are the longest. Tail even. Feet small. Lateral toes equal.



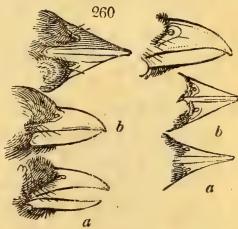
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*N. flavicollis*. Vieil. G. pl. 75.  
*ruficapilla*. Ib. (plate without a number.)

*pileata*. Pl. Enl. 720. f. 2.

**AGLAÏA**, Sw. (fig. 260.) Size

small. Bill short, slender, notched; the base with thick-set feathers, which more or less cover the nostrils. Wings rather lengthened; the first, and sometimes the second, quill slightly abbreviated. Tail short, even. Feet rather



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\* In *T. nigerrimus* the feet are strong, and the inner toe much shorter. This species seems to me intimately connected with the subgenus *Lamprotes*.

small. The inner toe shorter than the outer. Claws broad, and fully curved.

paradisea. Pl. Enl. 127. f. 1.	cucullata. Braz. Bds. pl. 7.
gyrola. Zool. Ill. ii. pl. 28.	cyanoptera. Ib. pl. 8. (a)
cianocephala. Braz. B. pl. 5.	flava. Zool. Ill. pl. 31.
citrinella. Ib. pl. 6.	chrysoptera. Pl. Enl. 133. f. 2.

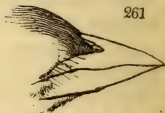
*Euphonia*, Vieil. Bill very short, broad, and triangular : tip of the upper mandible with one or two notches. Wings lengthened ; the first and second quills longest. Tail short, divaricated. (fig. 260. b.)

*E. cæruleocephala*. Nob. Pl. Enl. 809. f. 1.

*Tanagrella*, Sw. Bill very slender, compressed, and much lengthened. The lateral toes equal.

*T. multicolor*. Nob. Part 5. No. 98. Pl. Enl. 669. f. 3. ?

**PIPILLO**, Vieillot. (fig. 261.) Bill conic, finch-like, hard : the upper mandible but slightly notched ; the tip not bent downwards ; and the culmen very slightly arched, having a slight gibbosity at its base, close to the front : commissure much sinuated, and often angulated : the margins inflexed. Wings short ; the two first quills graduated. Tail large, broad, lengthened, rounded, generally tipped with white. Feet very large and strong. The inner toe shorter than the outer. The claws slender, and but slightly curved.



erythrophthalmus. Vieil. G. pl. 80.	fusca. Part 5. No. 197.
maculata. Ill. O. pl. 31, 32.	superciliosa. Ib. No. 95.
arctica. N. Zool. ii. pl. 51.	rufitorques. Ib. No. 96.
macronyx. Part 5. No. 196.	personata. Ib. No. 94.

*Arremon*, Vieil. Bill short, conic, finch-like ; the sides compressed ; the tip of the under mandible very slightly notched, but not inflected over the lower ; the commissure straight, the edges inflected. Nostrils small, basal, concealed by the frontal plumes. Wings very short, rounded ; the three first quills graduated. Tail moderate, considerably rounded ; the feathers narrow, and obsolete pointed. Feet large, slender.

Tarsus longer than the middle toe. Lateral toes equal. Claws slender, and but slightly curved.

*A. torquatus*. Vieil. G. pl. 78. *flavirostris*. Part 5. No. 198.

SUBFAM. FRINGILLINÆ. *The Ground Finches.*

Bill short, in general very conic, obsoletey notched or entire. The culmen not curved. Feet formed for walking.

*PYRGITA*, Antiq. *Sparrow*. Bill unequally conic, short, thick: sides of the upper mandible swollen; the tip notched: the base of the culmen rather broad and convex: the commissure straight. Wings moderate; the three first feathers longest, and of equal length. Tail moderate, even, divaricated, or very slightly forked. Tarsus shorter than the middle toe. Lateral toes nearly equal. Claws fully curved. The Old World.

*P. domestica*. Sel. pl. 54. f. 4, 5. *simplex*. West. Af. i. 208.  
*arcuata*. P. Enl. 230. f. 1. *indica*. Ill. Orn. iii. pl. 118.

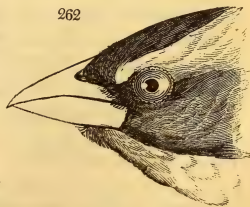
*Aimophila*, Sw. Bill more lengthened, unequally conic, compressed: the base of the culmen elevated and dividing the frontal feathers. Upper mandible slightly notched at the tip, and thicker at the base than the under one: commissure sinuated: culmen slightly arched from the base. Wings short, rounded; the two first quills graduated. Tail moderate, rounded; the feathers rather narrow. Feet strong. The lateral toes nearly equal. Claws slender, slightly curved. America only.

*G. rufescens*. Part 5. No. 102. *superciliosa*. Ib. No. 101.

*Leucophrys*, Sw. (*fig. 262.*)

Bill unequally conic; the sides not swollen; *the tip entire*. Nostrils naked, round. Wings lengthened; the first quill spurious, the three next almost equal. Tail rather short, even; the covers very long. Feet

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strong, robust. Lateral toes unequal, the inner shortest. Claws strong, and fully curved. Africa.

L. pileatus. Part 5. No. 199.

**FRINGILLA**, Linn. Bill lengthened, conic; the culmen not curved; the tip slightly notched, but not reflected. Commissure straight. Claws small, slender, but slightly curved.

*Passerella*, Sw. Bill short and perfectly conic, thick at the base, and rather abruptly pointed at the tip, which is entire. *Culmen perfectly straight*. Both mandibles of equal thickness. Wings moderate; the first quill shorter than the second, third, and fourth, which are the longest. Tail moderate, broad, and nearly even. Feet large, strong. *Middle toe longer than the tarsus; inner toe much shorter than the outer*. Claws long, slender, and but slightly curved; hinder claw as long as the toe. America.

P. Iliaca. Wilson, iii. 22. f. 4.

*Fringilla*. Bill forming a perfect, slightly lengthened cone, with both mandibles of equal thickness; the upper one slightly notched, but not inflexed at the tip: the commissure straight. Wings lengthened, pointed; the first quill always longer than the fifth. Tail moderate, forked; the outermost feathers the longest. Legs slender. Tarsi moderate. Lateral toes equal; middle toe very long. Europe and America.

F. cœlebs. Sel. pl. 54. f. 6, 7. hyemalis. Wils. ii. 16. f. 6.  
montifringilla. Ib. f. 8, 9. graminea. Ib. 31. f. 5.

*Zonotrichia*, Sw. Bill as in *Fringilla*: the commissure straight. Wings not lengthened; the first quill shorter than the four next, which are of nearly equal length. Tail rather lengthened, slightly divaricated; the outermost feathers shortened. Lateral toes slightly unequal. Tarsus and middle toe of equal length. America only.

leucophrys. Wils. iv. 31. f. 4. albicollis. Wils. pl. 22. f. 2.  
Pennsylvanica. Ib. iii. 5. f. 2. subtorquata. \* Sp. ii. 53. f. 3.

\* The specific name of *graminea*, given by Spix to this bird, had been previously used by Wilson for another.



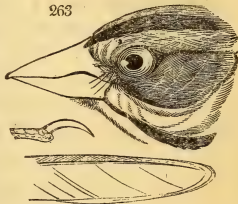
*Ammodramus*, Sw. Bill with the commissure sinuated, and the tip slightly inflexed. Wings very short, reaching only to the base of the tail; the five first quills of equal length, and scarcely longer than the secondaries. Tail moderate, very slender, and graduated; the feathers narrow, lanceolate, and somewhat rigid. Feet slender. Lateral toes equal; hind toe and claw longer than the tarsus. Claws very slender, and but slightly curved.

*A. caudacuta*. Wils. pl. 34. *palustris*. Wils. pl. 22. f. 1.  
*maritima*. Ib. 34. f. 2.

*Chondestes*, Sw. *Larkfinch*.

(fig. 263.) Bill resembling *Passerella*, but the tip slightly inflexed and notched: the commissure considerably sinuated, and lobed in the middle. Wings lengthened, rather pointed; the three first quills nearly equal. Tail

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much rounded; the feathers broad, and the three outer graduated. Feet moderate. Hinder toe and claw much longer than the lateral toes, which are equal.

*C. strigata*. Sw. Syn. Mex.; also Bon. Am. Orn. i. pl. 5. f. 3.

**EMBERIZA.** *Buntings*. Bill conic. Culmen nearly straight. Under mandible thicker than the upper, which is furnished with an internal knob; the tip with an obsolete notch: the margins of both mandibles inflexed. Hinder and inner toe of equal length. Claws slender, curved. Tarsus and middle toe equal.

*Emberiza*, Linn. Wings moderate; the first quill shorter than the four next, which are the longest. Tail forked; the feathers narrow, and somewhat lanceolate. Lateral toes unequal, the inner shortest; middle toe lengthened. Europe and America.

*E. schoeniculus*. Selby, pl. 52. *Canadensis*. Wil. ii. 16 3.  
f. 5, 6. *pallida*. North. Z. ii. p. 251.

*socialis*. Wil. ii. 18. f. 5

*Fringillaria*, Swains. Bill with upper mandible entire.

Wings short; the primary quills not much longer than the tertials. Tail moderate, either quite even, or very slightly rounded. Lateral toes small, equal. All the claws small and short. Africa, also India?

F. capensis. Pl. Enl. 664. 2. rufa. Part 5. No. 103.  
 striolata. Rüpp. Atl. 10. a. vittata. Ib. No. 104.  
 cæsia. Ib. 10. b. anthoïdes. Ib. No. 105.

**LEPTONYX**, Sw. Bill intermediate between *Emberiza* and *Ammodramus*. Culmen slightly arched from the front. Under mandible rather thicker than the upper, which is notched: commissure sinuated and angulated at the base; the margins inflexed. Wings short; the three first quills nearly equal. Tail moderate, graduated. Feet as in *Ammodramus*; but the hind claw as long as its toe.

L. melanotis. Part 5. No. 100.

**Melophus**, Sw. General structure of *Fringillaria*; but the upper mandible is notched near its tip. Hinder claw lengthened, but rather shorter than its toe. Lateral toes equal. Tail even. Head crested. Tertials not lengthened.

M. erythropterus. Ill. of Orn. pl. 132.

**PLECTROPHANES**, Meyer. Bill very conic; the tip perfectly entire: the under mandible thickest, with the general structure of *Emberiza*. Lateral toes equal. Claws nearly straight. Hind toe and claw longer than the lateral toes; the claw much lengthened. Wings long, pointed.

**Miliaria**, Sw. Bill of *Emberiza*. Wings moderate, pointed; the three first quills the longest, and nearly of equal length. Tarsus short, strong. Middle toe much lengthened, and longer than the tarsus; lateral toes short, perfectly equal. Hinder claw rather shorter than the toe, and slightly curved. Europe.

M. Europæa. Sel. pl. 52. f. 1. citrinella.\* Ib. f. 2, 3.

**Plectrophanes**, Meyer. Bill of *Emberiza*. Wings

\* The yellowhammer is, no doubt, an aberrant species, indicating that the group between this and our *Emberiza*, has the upper mandible faintly notched. This group seems represented by *Melophus*.

long; first quill longer than the second, the rest graduated. Tarsus short. Middle toe and claw moderate, not longer than the tarsus; lateral toes short, perfectly equal. Hinder claw as long as its toe; anterior claws small, and all of them nearly straight. America and Europe.

*P. nivalis*. Selby, pl. 52. f. 7.  
Wilson, iii. 21. f. 2.

*Laponica*. N. Z. ii. pl. 48.  
*picta*. Ib. ii. pl. 49

**AGROPHILUS**, Sw. Bill resembling *Chondestes*; but the upper mandible is entire, and the base of the culmen far advanced between the frontal feathers. Wings somewhat lengthened; the first quill



spurious, and not half so long as the second; fifth and second equal, third and fourth longest. Tail moderate, slightly rounded. Feet large and strong. Middle toe rather longer than the tarsus; lateral toes equal, but shorter than the hinder. All the claws strong, and fully curved. (*fig.* 264.)

*A. superciliosus*. Rüpp. Atlas, pl. 15. West Af. i. 209.

#### SUBFAM. ALAUDINÆ. *Larks*.

Bill more lengthened than in any of the *Fringillidæ*; the tip entire, or obsoletely notched. Tertian quills considerably lengthened, pointed, and generally as long as the quills. Claws very slightly curved; the claw of the outer toe always shorter than that of the inner toe; the hinder claw considerably lengthened, and either nearly straight, or very slightly curved.

**ALAUDA**, Linn. Bill cylindrical. Nostrils concealed.

Wings very long; no spurious quill; the first, second, and third quills longest, and nearly equal; the rest considerably graduated; tips of the lesser quills emarginate. Tail forked. Head crested. Europe and America. The fissirostral type.

*A. arvensis*. Selby, 50, f. 1. *cornuta*. Wils. pl. 5. f. 4.

*CALENDULA*, Linn. Bill thick, much compressed ; the



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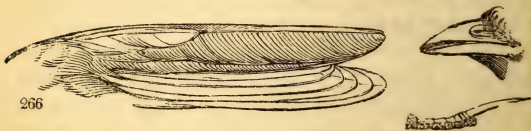
culmen curved and convex ; the commissure arched : the tip of the upper mandible wide above, and inflexed. Wings long, or moderate ; the first quill very small and spurious ; the second nearly equal to the third and fourth ; lesser quills short, emarginate. Tail slightly forked. Lateral toes equal. Africa. The dentostrual type. (*fig.* 265.)

*C. magnirostris*. Ois. d' Af. pl. 193.

*Myrafra*, Horsf. Bill as in *Calendula*. Wings short, rounded ; greater quills hardly longer than the secondaries and tertials ; the first quill spurious, half the length of the second, which is shorter than the third ; the third, fourth, fifth, and sixth equal, and longest. Tail short, even. Legs long.

*M. Javanica*. Lin. Tr. xiii. 159.

*Braconyx*, Sw. (*fig.* 266.) Bill as in *Calendula*. Hinder claw very short. Wings and tarsi much lengthened. Africa.



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*AGRODROMA*, Sw. (*Anthus pars* Auct.) Bill slender, considerably compressed: both mandibles of equal length ; the tip of the upper one not reflected over the lower, and with a small notch, almost obsolete. Wings long ; the four first quills nearly equal ; the rest rapidly diminishing, and emarginate at their tips ; tertials lengthened, pointed, as long as the quills. Tail moderate, even. Legs pale, long.

slender. Tarsus longer than the middle toe. Lateral toes equal, but the outer claw shorter than the inner. Colour brown: lark-like. Distribution universal. The insessorial or pre-eminent type.

rufescens. P. E. 661. f. 1. bistrigata and Australis. Part 5.  
No. 107, 108.

**MACRONYX**, Sw. (*fig. 267.*) Bill slender, compressed, thrush-like, entire. Nostrils large, naked, the aperture lateral. Wings short; the primaries not longer than the tertiaries,



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the four first of equal length; secondaries long, emarginate. Tail moderate, even. Feet enormous. Tarsus and hinder toe very long, and of equal length. Lateral toes unequal, the inner shortest. Africa. The rasorial type.

*M. flavicollis*. O. d' A. pl. 195. *flavigaster*. Sw. W. A. i. 215.

**CERTHILAUDA**, Sw. Bill slender, lengthened, more or less curved. Nostrils round, naked. Wings very long; the first quill spurious; the three next nearly



268

equal. Tail moderate, even. Feet lengthened. The lateral toes equal. Length of the hinder claw variable, although typically short and straight. Africa. The tenuirostral type. (*fig. 268.*)

*longirostra*. Ois. d' Af. 192.

*nivosa*. West. Af. i. 213

*bifasciata*. Rupp. Atlas, pl. 5.

**SUBFAM. PYRRHULINÆ.** *Bulfinches.*

Bill very short, thick, entire: the upper mandible arched both on the culmen and commissure. Wings with the four first quills of nearly equal length.

**PYRRHULAUDA**, Smith. Bill short; the sides much compressed; the tip entire; the culmen arched: commissure straight. Nostrils concealed by the frontal feathers. Wings moderate; the first quill very small, and spurious; the three next equal, and longest. Tail moderate, slightly forked. Feet black. Tarsi moderate. Toes very small. Lateral toes equal. Hinder claws lengthened, slightly curved.

leucotis. Pl. Col. 269. f. 2. melanosoma. Part 5. No. 108.  
cruciger. Ib. 269. f. 1.

**PYRRHULA**. Bill remarkably short, swelled on every side: the upper mandible smaller than the under, and considerably wider above than it is high: culmen arched from its base: commissure curved. Wings moderate; the four first quills of nearly equal length, and longest. Tail moderate, even, sometimes divaricated. Lateral toes unequal, the inner shortest; middle toe and tarsus equal.

*P. vulgaris*. Selby, pl. 54. f. 1, 2.

*Crithagra*, Sw. Bill short, resembling that of *Pyrrhula*. Wings moderate; the three first quills nearly equal. Tail moderate, slightly forked. Tarsus shorter than the middle toe. Lateral toes equal. Claws lengthened, slender, acute, and but slightly curved; the hinder as long as its toe. Africa, India.

*C. sulphurata*. I. O. 109. f. 1. canaria. Part 5. No. 113.  
*cinerea*. Part 5. No. 115. chrysopyga. W. Af. pl. 17.  
*strigilata*. Ib. No. 111. ruficauda. Part 5. No. 109.  
*canicollis*. Ib. No. 110. bistrigata. Ib. No. 112.  
*flava*. Ib. No. 114.

*Spermophila*, Sw. General structure of *Pyrrhula*. Bill less swelled. Tail rounded. Wings shorter and more rounded. Lateral toes equal; middle toe longer than the tarsus. America only.

*S. rubiginosa*. Spix, ii. pl. 59. f. 1. albogularis. Sp. ii. 60. f. 1.  
*cinereola*. Pl. Col. pl. 11.

**PSITTIROSTRA**, Temm. Bill short, much hooked, slightly swelled at its base: upper mandible with its tip curved over the lower, which has the tip rounded

and obtuse. Nostrils basal, lateral, partly closed by a membrane covered with the frontal feathers. Tarsus longer than the middle toe. Lateral toes equal; all the toes divided to their base. Wings with the first quill wanting\*; the second slightly shorter than the third. (*Tem. Manuel*, 71.)

*L. psittacia*. Lath. Syn. 3. pl. 42.

**CORYTHUS**, Cuv. Upper mandible projecting and curving over the tip of the lower. Tarsus much shorter than the middle toe, but longer than the hind toe. Lateral toes unequal, the inner shortest. Claws slender, attenuated, acute, and not much curved. Tail broad, and slightly forked.

*C. enucleator*. N. Zool. pl. 53.

**HÆMORHOS**, Sw. Bill rather more lengthened than in *Pyrrhula*: the commissure sinuated. Wings lengthened, pointed. Tail forked. Feet short, robust. Middle toe much longer than the tarsus; inner toe rather shorter than the outer. Claws short, and fully curved; the hinder shorter than its toe. America.

*H. purpureus*. Wils. i. 7. f. 4. *frontalis*. Bon. Am. Or. i.

**LOXIA**, Linn. Bill somewhat lengthened, much compressed. Under mandible crossed at its tip over the extremity of the upper; the tips of both entire. Nostrils defended by incumbent setaceous feathers. Wings long, pointed; the first quill longest. Tail very short, forked. Tarsus very short. Toes and claws large, robust; lateral toes short, unequal, the outer longest; hinder toe longer than the tarsus. All the claws fully curved.

*L. pinetorum*. (Meyer). Selby, *curvirostra*. Edw. 303.

pl. 53\*\*, f. 1. *leucoptera*. Wils. iv. 31. f. 3.

#### FAMILY MUSOPHAGIDÆ. *Plantain-eaters*.

Bill short: upper mandible high; the culmen arched; the margins either serrated or entire: the under man-

\* *Ire rémige nulle*.—*Tem*. This requires explanation, but we have not a specimen of this exceedingly rare bird.

dible very thin. Feet short, formed for clinging. The toes various.

SUBFAM. PHITOTOMINÆ. *Plant-cutters.*

Bill serrated, but not swollen. Feet with two or three toes forward, and one backward.

PHYTOTOMA, Molina. Bill short, compressed, the base widened; high at the base, and gradually curved: the lower mandible much weaker, straight: the commissure slightly arched, with the margins crested. Tongue short, pointed. Nostrils basal, small, rounded. Wings moderate; the two first quills graduated. Tail moderate, even. Feet strong. Lateral toes unequal, the inner shortest. Claws slender, slightly curved.

*P. rufescens.* Ill. of Orn. i. pl. 5.

HYREUS, Stevens.\* Bill more lengthened, nearly as long as the head; the margins serrated. Tail forked. Toes only three, two before and one behind.

*H. Abyssinicus.* Lath. Syn. Sup. ii. pl. 133.

SUBFAM. COLINÆ. *Colies.*

All the four toes placed forward.

COLIUS, Linn. Bill short: the upper mandible widened at the base, but very convex above: culmen elevated, and arched downwards: commissure entire: the margin of the upper mandible folding over the edges, and almost hiding the lower, which is very thin and straight. Nostrils large, basal, naked; the aperture linear, oblique, and a little removed from the base of the bill. Wings rather short, pointed. Tail very long, cuneated; the feathers very narrow, and somewhat rigid. Feet strong, four-toed. The exterior toe and the hallux (placed on the inner side) inserted in an oblique direction. Claws slender, rather acute, not much curved.

\* Imperfect as is the above account, taken from the obscure description and rude figure of Dr. Latham, I feel fully persuaded that this is a perfectly distinct type from the true *Phytomæ* of the New World. The difference of food alone sanctions me in this opinion, if, as it is stated, the first lives upon the roots of plants, and the latter upon kernels of fruits.



*C. Senegalensis*. O. d' A. pl. 258. *striatus*. Ois. d' Af. pl. 256.  
*leuconotus*. Ib. pl. 257.

SUBFAM. MUSOPHAGINÆ. *Plantain-eaters*.

Three toes forward and one backward; the outer toe placed obliquely.

**CORYTHAIX**, Illiger. Bill short, rather small, high, and greatly compressed. The frontal feathers reposing over and concealing the nostrils. Culmen high, curved to the tip. Lower mandible narrow: both mandibles distinctly notched at the tip, and finely serrated. Wings short, rounded; the three first quills graduated. Tail long, broad, rounded. Feet short, strong. Middle toe longer than the tarsus; lateral toes equal; hinder shortest; external toe capable of being turned a quarter of the way backward. Claws short, thick, and much compressed.

*C. Persa*. Pl. Enl. 601. *erythrolophus*. Pl. Col. 23.  
*Buffoni*. Edwards, pl. 7. *leucotis*. Rüppell. MSS.  
*Senegalensis*. West. Af.  
 pl. 31. (head.)

**CHIZÆRHIS**, Wagler. Bill large, high and thick at the base, compressed beyond. Culmen thick, convex, considerably arched. Lower mandible not half so high as the upper: the tips of both deeply notched, with their margins finely crenated. Nostrils basal, placed close to the top of the bill, naked, lunular, and pierced in the substance of the bill. Wings lengthened; the four first quills graduated. Tail lengthened, slightly rounded; the tips very obtuse. Feet as in *Corythaix*.

*C. variegata*. W. Af. i. pl. 20. *zonura*. Rüpp. MSS.

**MUSOPHAGA**, Isart. Bill resembling that of *Chizærhis*; but the base enormously dilated, so as to spread like a casque or helmet over the fore part of the head as far as the crown, where its thickened sides form a semi-circle. Nostrils naked, oval, open, placed nearer to the tip than to the eyes, and pierced in the substance of the bill. Wings, feet, and tail as in *Corythaix*.

*M. violacea*. Isart. West. Af. i. pl. 19.

FAMILY BUCERIDÆ. *Hornbills.*

The characters of this family are those of the only genus.

**BUCEROS**, Linn. Bill enormous, generally furnished with protuberances of different shapes at the base of the upper mandible, beyond which the bill is much compressed, and both mandibles curved downwards; the margins entire. Nostrils lateral, basal, very small, oval, or round, and almost naked. Wings short or moderate, rounded. Tail rather lengthened; the feathers narrow at their base, and obtuse at their tips. Feet short. Middle toe as long as the tarsus; lateral toes unequal, the outer united to the middle as far as the first joint; hinder toe shortest. Claws short, thick. The following species have been chiefly enumerated M. Temminck: —

B. rhinoceros. Pl. Enl. 934.	cineraceus. Tem. Nepal.
monoceros. Ib. 873.	cavatus. Shaw.
lunatus. Pl. Col. 546.	Malabaricus. Raff.
cassidix. Ib. 210.	galeatus. L. T. xiv. p. 578.
Abyssinicus. Pl. Enl. 779.	pucoran. Raff.
hydrocorax. Ib. 283.	gracilis. Pl. Col. 535.
galeatus. Ib. 933.	convexus. Ib. 530.
elatus. Pl. Col. 521. f. 1.	exarhatus. Ib. 211.
cylindricus. Ib. 521. f. 2.	sulcatus. Ib. 69.
galeritus. Ib. 520.	buccinator. Ib. 284.
antracicus. Ib. 529.	Panayensis. Pl. Enl. 780, 781.
corrugatus. Ib. 531.	nasutus. Ib. 890.
comatus. Raff. Pl. Col.	erythrorhynchus. Ib. 260.
Malayanus. Ib.	Nepalensis. Hodgson.

## TRIBE III. SCANSORES.

FAMILY RAMPHASTIDÆ. *The Toucans.*

Bill enormous, vascular within; the margins serrated. Wings short, rounded. Feet with two toes before, and two behind.

**RAMPHASTOS**, Linn. Bill smooth. Nostrils entirely concealed, and placed at the edge of the thickened frontlet of the bill. Wings short, rounded; the four

outer quills graduated and abruptly pointed. Tail short, rounded.

*R. magnirostris.* (*Toco* Auct.) Pl. Tucanus. Pl. Enl. 307. Enl. 82.

**PTEROGLOSSUS**, Illiger. Bill smooth, less compressed. Nostrils vertical, naked, round ; pierced on the upper surface of the bill, on the edge of the frontlet. Wings short, rounded. Tail lengthened, graduated.  
*P. aracari.* Pl. Enl. 166.

**AULACORYNCHUS**, Gould. Bill considerably attenuated ; furnished with longitudinal grooves on the sides. Nostrils lateral, placed in a furrow, and on a line with the eyes. Rictus or gape wide, extending to beneath the eye. Wings rounded. Tail graduated.  
*A. sulcatus.* Sw. Zool. Ill. i. 44.

**SCYTHROPS**, Latham. General structure of *Pteroglossus* ; but the margins of the mandibles are without teeth. Wings long ; the two first quills graduated ; the third longest. Tail long, graduated. Australia only.  
*S. Australis.* White's Voy. pl. 5.

#### FAMILY PSITTACIDÆ. *Parrots.*

Bill very short : the upper mandible greatly curved over the lower, which is considerably shorter.

##### SUBFAM. MACROCIRCINÆ. *Macaws.*

Upper mandible greatly hooked ; lower mandible much higher than broad. Tail very long, cuneated.

**MACROCIRCUS**, Vieillot. Size large. Orbits, and sometimes the face, destitute of feathers. Nostrils concealed. Notch in the upper mandible obsolete ; the under remarkably short, but very deep.\* (*fig.* 269.)



*M. tricolor.* Kuhl. Le Vaill. pl. 3.

\* The true characters of the subtypical group I am not sufficiently acquainted with ; but I am led to believe it is represented by those macaws which have the upper mandible conspicuously toothed, and the cheeks more or less naked.

**CONURUS**, Kuhl. Size much smaller. Upper mandible distinctly toothed. Orbits naked. Under mandible deeper than in its length. Four first quills the longest. America only.

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*C. vittatus*. Spix, i. pl. 21.  
*chrysophrys*. Part 5. No. 120.  
*macrognathus*. Spix, i. pl. 25.  
 (aberrant.) (*fig.* 270.)

**LEPTORYNCHUS**, Sw. Bill slender: the upper mandible very slightly curved, considerably prolonged, and obsoletely notched. Nostrils concealed. South America.

*L. ruficaudus*. Lear. Psitt. pl. 11.

**PALÆORNIS**, Vigors. Under mandible small, scarcely deeper than it is long; the upper distinctly toothed; the tip acute. Tail very long, cuneated; the feathers narrow, almost linear, and with their tips obtuse; the two middle greatly exceeding the others. The Old World.

*P. torquatus*. Le Vaill. pl. 22.

SUBFAM. PSITTACINÆ. *Parrots*.

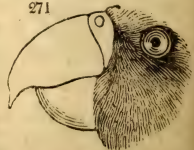
Upper mandible very distinctly toothed; lower mandible longer than it is high. Tail short, even or rounded.

**ERYTHROSTOMUS**, Sw. Tail rather lengthened, graduated, or rounded; the feathers broad. Wings moderate, resembling those of the next genus; but the tertials are not longer than the secondaries. Asia, America.

*macrorynchus*. Le Vaill. pl. 85. *cyanogaster*. Part 5. No. 180.

**CHRYSOTIS**\*, Sw. *Amazonian Parrots*. Face plumed. Wings rather short; the first and second quills graduated, and shorter than the third and fourth, which are the longest; all these have the inner web

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\* In allusion to the yellow colour on the ears or face of nearly all the species.

sinuated in the middle: tertials very long. Tail short, longer than the wings, broad, with the tips rounded. America only. (*fig.* 271.)

Amazonicus. LeVail. pl. 84.	æstivus. Le Vail. pl. 110.
Dufresnii. Ib. 91.	autumnalis. Ib. 111.
pulverulentus. Ib. 92.	Havanensis. Ib. 122.
ochropterus. Ib. 98.	festivus. Ib. 129.
zanthocephalus. Ib. 98. bis.	cianocephalus. Ib. 135.
sordidus. Ib. 104.	columbinus. Spix, i. 37.
signatus. Ib. 105.	Xanthops. Ib. i. 26.
cyanotis. Ib. 106.	menstruus. Ib. 114. (aberrant.)
leucocephalus. Ib. 107.	And several new species.

**PSITTACUS\***, Linn. Wings lengthened, nearly as long as the tail. Face (typically) naked. Tail even; the feathers rounded. The Old World.

*P. erythacus.* Le Vaill. pl. 99.

**AGAPORNIS**, Selby. Size diminutive. Under mandible very thick. Wings long, but shorter than the tail; the three first quills equal and longest. Tail short, rounded; the feathers lanceolate, pointed. South America only.

*A. cyanopterus.* Part 5. No. 118. *Guianensis.* Part 5. No. 119.

**POICEPHALUS**, Sw. Wings very long, reaching to the end of the tail; the first quill scarcely shorter than the second; the inner web of the three first primaries suddenly narrowed beyond the middle, and then obliquely truncated at the tip. Tail very short, even; the feathers broad, truncate, but the shafts prolonged into mucronate points. Tropics of the Old World only: representing *Palæornis*.

Senegalensis. LeVail. pl. 116.	aureus. Le Vaill. pl. 138.
Geoffroyi. Ib. 112.	Swinderianus. Lear. Psitt.
melanocephalus. Ib. 119.	pl. 42.
pileatus. Ib. 133.	torquata. Ib. 40.
Barrabaudi. Ib. 134.	taranta. Ib. 39.

\* In this genus, which I think is the most typical of the *Psittacinæ*, I propose to retain, for the present, all those parrots of the Old World, which will not arrange under the next group.

SUBFAM. PLYCTOLOPHINÆ. *Cockatoos.*

Head large, ornamented with a folding or procumbent crest. Bill short, very broad; the culmen remarkably curved. Tail rounded, lengthened, broad; the feathers not narrowed.



PLYCTOLOPHUS, Vieil. Head with a folding crest. Base of the under mandible (fig. 272. b) frequently concealed by feathers, which then makes it appear higher than it is long (a a).



long (a a). Wings long; secondaries, tertials, and sometimes the tail feathers, mucronate. India, Australia. Subtypical.

*P. erythropterus.* Lear. pl. 5.  
*galeritus.* Ib. 3.  
*sulphureus.* Ib. 4.  
*galeatus.* Lath. G. H. pl. 28.  
*rosaceus.* Lear. pl. 2.

*Cookii.* Kuhl. pl. 3.  
*Banksii.* White's Voy.  
*Solandri.* Lin. Tr. xiii. 113.  
*funeralis.* Shaw. N. M. 186.  
 ? *Baudinii.* Lear. pl. 6.

LICMETIS, Wagler. General structure of *Plyctolophus*, with the bill of *Leptorynchus*.\* The tenuirostral type.

*L. tenuirostris.* Kuhl. Pl. Col.

MICROGLOSSUS, Geoffroy St. Hilaire. Cheeks naked. Head large. Crest of narrow procumbent feathers. Bill very large; the upper mandible enormous, doubly sinuated, and prolonged into an acute hook; the lower very short, but of great depth: the culmen almost perpendicular. Tail short, even. Tongue retractile, small, cylindrical, terminated by a thickened gland. India. Typical.

*M. aterrimus.* Le Vail. pl. 12, 13. *griseus.* Le Vail. pl. 11.

\* Not having a specimen of this bird before me, I merely indicate the typical characters.

**CENTROURUS**, Sw. Size large. Bill as in *Microglossus*; but smaller. The under mandible is horizontal and porrect, as in *Lorius*, with the gonys not curved. Nostrils tumid, naked; the aperture central and round. Tail rather short, even, or slightly rounded. The feathers broad, but ending abruptly in a lengthened, soft, acuminate point. The rasorial type.

Australis. Shaw. M. L. p. 87. ? dasyptilus. Les. Ill. pl. 1.

SUBFAM. LORIANÆ. *Lories*.

Bill but slightly curved: the margin of the upper mandible sinuated; the notch obsolete: lower mandible slender, conic, much longer than high: the gonys (typically) straight.

**BROTOGERIS**, Vigors. Bill as in *Trichoglossus*: the commissure sinuated; but the margins without teeth. The lower mandible perfectly straight, conic, and without any curve on the gonys. Tongue tipt with a circle of rigid filaments. Head generally crested. Wings very long and pointed, reaching to the tail; the first quill rather shorter than the two next, which are equal and longest; the rest rapidly diminishing: scapular quills shorter than the secondaries. Tail moderate, graduated; the feathers broad; the tips narrowed. Size small. Australian Islands only?

sappherinus. LeVail. pl. 65. Kublii. Zool. Jour. i. pl. 16.

(Sparmanni, the young of do.) pyrrhopterus. Ib. ii. 394.

porphyrocephalus. Shaw. coccineus. She. LeV. pl. 64.

Le Vail. p. 1 71.

**PSITTACULUS**, Khul. Upper mandible distinctly notched, much prolonged, and very slightly curved; under mandible short: the gonys curved. Wings pointed; the first quill longest. Tail very short, even; the feathers broad, and their tips obtuse.

P. vernalis. Z. Ill. ii. pl. 1.\* rubrifrons. Lear. Psitt.

galgulus. Pl. Enl. 192. f. 2. pl. 41.

\* The bill in this species is bright red, in *galgulus* it is deep black.

TRICHOGLOSSUS, Vigors. (*fig. 273.*) <sup>273</sup>

Bill compressed: the upper mandible much hooked; the margin without a notch: under mandible lengthened; much longer than deep. Wings pointed; the three first quills equal; tertials longer than the secondaries. Tail long, cuneated; the feathers narrowed throughout.



T. Swainsonii. Le Vaill. pl. i. pl. 24. Zool. Ill. ii. pl. 92.

LORIUS, Brisson. Bill as in *Trichoglossus*. Wings pointed. The two first quills the longest. Tail moderate, rounded, or graduated; the feathers broad, and hardly narrow at their tips.

L. garrulus. Z. Ill. ii. pl. 12. Isidorii. Z. Ill. ii. pl. 8.

PYRRHODES, Sw. Bill and general structure of *Lorius*. Tail cuneated, very long; the feathers narrow and pointed; the two middle pair greatly exceeding the others. Indian Islands: representing *Palæornis*.

P. papuensis. Le Vaill. i. pl. 77.

SUBFAM. PLATYCERCINÆ. *Loriets*.

Tail long, very broad, considerably cuneated. Bill strong, thick, toothed: the culmen very convex. Under mandible deep, but very short: the gonys curved. Feet and toes slender. Tarsus longer than the hallux.

VIGORSIA, Sw.\* General structure of *Platycercus*. Orbits naked. Tail lengthened, even, or slightly rounded; the feathers broad throughout. Rasorial.

V. vasa. Le Vaill. pl. 81. niger. Le Vaill. pl. 42.

PLATYCERCUS, Horsfield and Vigors. Tail cuneated, re-

\* I wish to name this interesting group, of which I only know the typical distinctions, in commemoration of the excellent ornithologist who first defined, and ably illustrated, many of the groups in this family; and whose efforts towards determining their natural arrangement have been conducted on sound philosophical principles. I have adopted nearly all the genera proposed by Mr. Vigors, simply because I have found them natural. Those of M. Wagler I have totally rejected: they are not better than M. Lesson's, and have therefore no claim to a preference, even on the score of bare priority: they seem to me, in short, highly artificial and altogether inadmissible. I suspect that in *Vigorsia* the tail feathers terminate in fine points (although I have not a specimen to refer to), because I view it as the rasorial type of this circle, representing the *Plyctolophinæ*.



markably broad ; the feathers wide, slightly narrowing towards their tips, which are obtusely rounded. Wings rather short, convex ; the outer web of four of the primaries suddenly dilated near their base. Under mandible somewhat angulated.

*P. scapularis.* Zool. Ill. ii. pl. 26.

**NANODES**, Horsfield and Vigors. Tail cuneated ; the feathers narrow and pointed. Wings rather lengthened ; the first quill equal to, or rather longer than, the second ; the others rapidly diminishing ; tips of the secondaries obliquely truncated. Under mandible not angulated. Feet as in *Platycircus*. Subtypical.

*N. discolor.* Z. Ill. i. pl. 62. *venustus.* Z. Ill. ii. pl. 21.

**LEPTOLOPHUS**, Sw. Wings very long ; the first quill rather shorter than the second, which is the longest ; the rest rapidly diminishing. Tail long, very broad ; the lateral feathers narrowing at their points, but the two middle considerably pointed, and extending much beyond the others. Tarsus shorter than the hallux. Nostrils large, tumid, naked ; the aperture round. The fissirostral type.

*L. auricomis.* Zool. Ill. ii. pl. 112. Lear. pl. 27.

**PEZOPORUS**, Illiger. Upper mandible with the margin arched and entire ; lower much thicker and stronger. Tail long, cuneated ; the feathers narrow and pointed. Tarsus much lengthened. Claws very slender. The gallatorial type. (*fig. 274.*)



*P. formosus.* Shaw's Zool. of N. H. pl. 3.

#### FAMILY PICIDÆ. *The Woodpeckers.*

Bill straight, more or less conic. Toes placed in pairs.

SUBFAM. PICIANÆ. *The True Woodpeckers.*

Bill wedge-shaped. Tongue vermiform.

**PICUS.** *Typical Woodpeckers.* Bill perfectly wedge-shaped, cylindrical : the culmen straight : lateral ridges re-

moved from the culmen. Versatile toe always longer than the anterior.\* (*fig. 275.*)



*Picus*, Sw. Lateral ridge situated nearer to the edge than to the culmen. Bill with the sides compressed. Neck long, and thin. Versatile toe considerably lengthened. America and India.

*P. robustus*. Spix, pl. 44. *principalis*. Wilson, 29. f. 1.

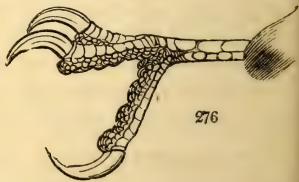
*Hemicircus*, Sw. Tail excessively short, and very broad. Neck short, very slender. Bill straight, considerably compressed. Lateral ridge slight, near to the margin. Nostrils concealed. Feet very large. Versatile toe always longer than the anterior. Wings nearly as long as the tail. India.

*H. concretus*. Pl. Col. 90.

*Dendrobates*, Sw. Lateral ridge close to the margin. Sides of the bill much compressed; the base wide. Versatile toe usually longer than the anterior. Plumage, olive above, generally spotted or banded. Africa only\*, excepting two species from Tropical America.

*D. fulviscapus*. Ois. d' Af. pl. 253.

*Aperternus*, Sw. Lateral ridges close to the margin. Bill rather broader than high. Feet three-toed; the two anterior nearly equal, the posterior much longer. Arctic regions. (*fig. 276.*)



*A. Americanus*. N. Zool. pl. 56.† *arcticus*. N. Z. pl. 57.

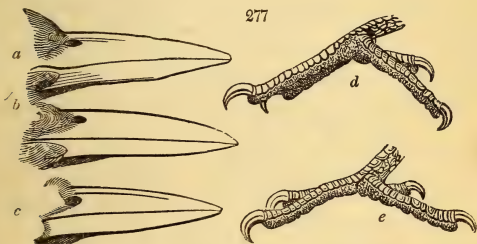
\* I use these terms for the sake of brevity: the versatile toe is the outer posterior toe, and the *anterior* is the outer fore toe, corresponding to the middle one of ordinary peckers.

† It being now ascertained that this is a distinct species from the European *tridactylus*, another name is necessary to designate it.

*Dendrocopus*, Sw. Lateral ridges close to the margin. Bill as broad as it is high, the sides not compressed. Versatile toe much longer than the anterior, which latter is but slightly longer than the inner toe. Plumage black, spotted, or banded with white above, and plain beneath. Universal.

*D. major*. Selby, pl. 38. f. 2.      *brunifrons*. Gould's Cent.  
*minor*. Ib. pl. 38. f. 3.      *Marattensis*, &c. &c.  
*Macei*. Pl. Col. 59. f. 2.

**CHRYSOPTILUS.** *Green Woodpeckers*. Versatile and anterior toes of equal length. Lateral ridge nearest to the culmen, which is sharp, and either quite straight or very slightly bent. Bill depressed or widened at the base. Colour green, banded or spotted with black. Subtypical genus.\*



*Dendromus*, Sw. Lateral ridge slight, very close to the culmen, which is perfectly straight. Sides of the bill compressed. Plumage olive. Africa and India.

*D. brachyrynchus*. W. Af. ii.      *punctatus*. Wagler. sp. 37.

*Chloronerpes*, Sw. Lateral ridge strong, well defined, and placed nearly half way between the culmen and the margin. Culmen quite straight. Versatile toe shorter

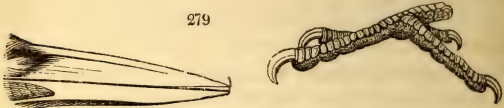


\* I do not feel confident that the subgenera in this division are placed in their true series; but *Dryotomus* certainly enters into this, rather than into the last genus; and I look upon the *P. Campestris* as naturally allied to this group, rather than to *Colaptes*.

shorter than the anterior. (*fig. 278.*) Neck slender. Tropical America only.

*C. rubiginosus*. Z. I. i. pl. 14. *macrocephalus*. Spix, 53. f. 2.

*Dryotomus*, Sw. Lateral ridge nearer to the culmen than to the margin. Bill very straight, widened on the sides, and broader than it is high. (*fig. 279.*)



Versatile toe much shorter than the anterior. America and Europe. Plumage black and white: representing *Picus*.

*D. pileatus*. Wilson, pl. 29. f. 2. *lineatus*. Spix, pl. 48.

*Chrysoptilus*, Sw. Lateral ridge slight, very close to the culmen, which is somewhat curved. Versatile toe as long as the anterior. Tropical America.

*C. Cayennensis*. P. Enl. 613. *guttatus*. Sp. i. pl. 53. f. 1. *Campestris*. Spix, pl. 46.

**MALACOLOPHUS**, Sw. *Rasorial Woodpeckers*. Versatile toe shorter than the anterior. Culmen curved. The lateral ridge (except in the typical group) wanting. Tarsus shorter than the versatile toe. Hind head with a crest of very soft feathers.

*Brachylophus*, Sw.\* Nostrils covered. Neck thick. Bill widened its whole length. Under mandible thickened at the base, with one or more slightly elevated lines (representing the lateral ridge) close to the culmen, which is arched. Gonys very short. Hind head with a shortened, narrow, pointed crest. Versatile and anterior toes nearly equal. Tarsus shorter. The Old World only. Rasorial.

*B. viridis*. Selby, pl. 38. *occipitalis*. Gould, Cent. pl. 47.  
*canus*. Edwards, 65. *squamatus*. Ib. 48.  
*miniatus*. Auct. *dimidiatus*. Pl. Col. 501.

\* Connected to *Chrysoptilus* by *B. puniceus*, and to *Chrysonotus* by *B. hemipodius* (*Bengalensis* Auct.), which completes the circle.

*Hemilophus*, Sw. Size large. Neck long and slender. Lateral ridge prominent and close to the culmen, which is very sharp and slightly arched. Gonyx hardly half the length of the under mandible. Anterior toe much longer than the versatile one. Hind head with a short compact crest. Wings and tail long, India only. Typical.

*P. pulverulentus*. Pl. Col. 389.

*Malacolophus*, Sw. Neck slender. Head with a lengthened crest of soft, loose, long feathers. Nostrils naked; the aperture oval. Bill broad at the base, much compressed beyond. Culmen curved, and very sharp. Lateral ridge (typically) wanting. Anterior toe longer than the versatile toe. Tropical America only. Subtypical. (*fig. 277. a, d*)

*M. cinnamomeus*. Pl. E. 524.

*flavicans*. Pl. E. 539.\*

*castaneus*. Spix, i. pl. 47.

*flavescens*. Spix, i. pl. 49.

*ochraceus*. Ib. 51. f. 1.

*undatus*. Edw. pl. 332.

*Meiglyptes*, Sw. Bill thick and broad at the base, as in *Melanerpes*. Culmen considerably arched; the sides much rounded, and somewhat cylindrical. Lateral ridge wanting. Wings long. Versatile and anterior toes equal. Tarsus slightly shorter. India. Fissirostral.

*P. poecilophus*. Pl. Col. 197. f. 1.

*Chrysonotus*, Sw. Bill as in *Brachylophus*; but the sides compressed, and the lateral ridge entirely wanting. Feet with only three toes. India only. Grallatorial: representing *Apternus*.

*C. tridactylus*. Lin. Tr. xiii. 177. (*P. tiga* Auct.)

**COLAPTES**, Sw. Tarsus lengthened, and equal to the versatile toe; which latter is shorter than the anterior. Bill broader at its base than it is high; the sides compressed: the culmen considerably curved from its base; the lateral ridge either obsolete, or entirely wanting. Nostrils partially defended by feathers.

*Geocolaptes*. Burchell, MSS. Bill as in *Colaptes*,

\* The connecting link to *Hemilophus*, as having the lateral ridge of that group.

but with a faint lateral ridge close to the basal half of the culmen. Tip of the upper mandible wide and depressed. Wings very short. Tarsus, anterior and versatile toes, all of the same length. Africa only.

*G. terrestris*. Burchell. Ois. d' Af. pl. 264.

*Colaptes*. Bill considerably compressed. Culmen arched from the base. Lateral ridge entirely wanting. Tarsus longer than the versatile toe. Wings long. (*fig. 277. b, e*)

*C. auratus*. Wils. pl. 3. f. 1. Mexicanus. N. Zool. ii. 315.

**MELANERPES**, Sw. Bill straight, more or less cylindrical: base wide: the ridge of the culmen slightly bent, but not very prominent: the sides rounded; the lateral ridge slight, and placed near, but not close to, the culmen. Gonys very long, as in the typical group. Nostrils nearly concealed. Wings long; the first quill spurious, or very small; the second nearly as long as the third. Toes various. Habits gregarious and migratory. Colours black, varied with white and red. The fissirostral type. America only.

*Centurus*, Sw. Gonys angulated, half as long as the under mandible. Lateral ridge about half the length of the culmen, which is gently curved. Sides of the bill compressed. Tarsus shorter than the versatile toe; the anterior rather longer. Plumage, above, black banded with white. (*fig. 277. c*)

*C. Carolinensis*. Wils. 7. f. 2. brachypterus. Sw. sp. nov.

*Leuconerpes*, Sw. Bill as in *Melanerpes*. The base wide, but the sides much compressed. Lateral ridge placed half way between the culmen and the margin. Wings long. Versatile toe shorter than the anterior. Tarsus shorter than either.

*L. candidus*. Zool. Ill. i. pl. 38.

*Melanerpes*, Sw. Bill straight, the base wide; the sides not compressed. Gonys long, and equally curving to the tip with the culmen. Versatile and anterior toes equal. Tarsus much shorter. Wings long, reaching almost to the end of the tail.

*M. erythrocephalus*. Wils. 9. f. 1. torquatus. Ib. 20. f. 3.

*Tripsurus*, Sw. Bill as in *Leuconerpes*; but the nostrils are thickly covered with incumbent bristles, as in the typical genus *Picus*. Feet very large; but the versatile and the anterior toes are of the same length. The tarsus considerably shorter than either.\*

T. flavifrons. Spix, pl. 52.

SUBFAM. BUCCOINÆ. *Barbuts*.

Bill surrounded with long bristles. Tail short, soft.

**ASTHENURUS**, Sw. Bill short, compressed, very straight. Rictus smooth. Wings with the three first quills graduated. Tail moderate. Versatile and anterior toes nearly equal. Tropical America.

A. exilis. P. Col. 371. f. 2. cirratus. P. Col. 371. f. 1.

**PICUMNUS**, Tem. Habit of *Asthenurus*; but the rictus is bristled; the tail very short, and not projecting beyond the wings. Tropical Asia.

P. abnormis. Pl. Col. 371. f. 3.

**Bucco**, Linn. Bill straight, strong; the base very broad, dilated, and surrounded with long and very rigid bristles. Tarsus shorter than the versatile toe. The Old World.

B. philippensis. Pl. Enl. 331. chrysoptera. Part 5. No. 125.

**Micropogon**, Tem. General structure of *Bucco*; but the gape smooth. The three first quills only graduated. South America only.

M. Cayennensis. Pl. Enl. 206. f. 1.

**POGONIAS**, Ill. General structure of *Bucco*; but the margin of the upper mandible distinctly toothed. Africa only.

P. sulcirostris. Z. Mis. pl. 76. (lævirostris is the young bird.)

**YUNX**, Linn. Bill short, slender, very straight; base widened. First quill nearly as long as the second.

\* This type is united to that of *Dendrocopus* by means of *D. varia*,—a bird which has the bill of *Dendrocopus*, and the feet of *Tripsurus*, and which thus closes the circle of the *Picianæ*. The tenuirostral type of *Melanerpes* I have not seen; but I have little doubt of its being the *Picus mero-pirostris* of Wagler, sp. 65.

Feet as in *Bucco*. Tail moderate, broad, even. The Old World.\*

*Y. torquilla*. Selby, pl. 38. f. 4.

**OXYRYNCHUS**, Tem. Bill as in *Yunx*; but the culmen more, and the gonys less, curved. Wings lengthened, pointed; the first quill nearly as long as the second, with the outer web crenated. Feet short, insessorial. Lateral toes equal. Tail moderate, even. South America.

*O. cristatus*. Zool. Ill. i. pl. 49.

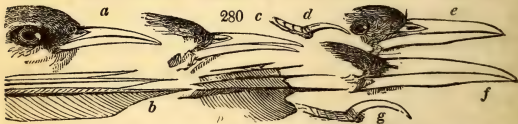
**FAMILY CERTHIADÆ. Creepers.**

Bill much compressed, entire. Feet insessorial. Toes greatly developed, and generally united at their base; the hinder always lengthened. Tail cuneated, rigid.

**SUBFAM. CERTHIANÆ. True Creepers.**

Bill generally curved, and greatly compressed. The anterior toes more or less united. Tail rigid, with the shaft projecting beyond the webs. The typical division.

**CERTHIA**, Linnæus. (*fig. 280. a, b*) Bill lengthened,



slender; both mandibles curved, entire. Wings rather lengthened; the three first quills graduated; the two next equal and longest. Tail lengthened, graduated, and divaricated; the feathers only slightly rigid, lanceolate, and acutely pointed; the tips not very stiff. Legs short, slender. The middle toe longest; the inner much shorter than the outer; hinder toe longer than the tarsus, the claw very long, and but slightly curved. All the claws very slender. The fissirostral type. Europe, America.

*C. familiaris*. Selby, pl. 39. f. 2.

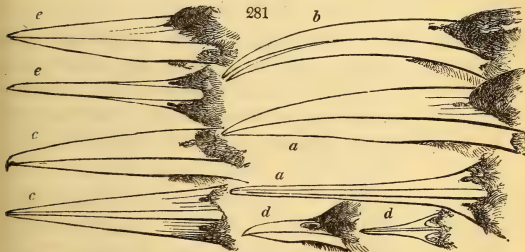
\* This and the next genus appear representatives of two subfamilies.



**OXYURUS**, Sw. (*fig. 280. c*) Bill short, straight, very slender, resembling that of a *Sylvia*; the sides compressed, and the margin inflexed: the tips entire. Wings rather lengthened; the outer quills graduated, the fourth and fifth equal. Feet large. Middle toe of the same length as the hinder; lateral toes unequal, the outer connected to the middle as far as the first point; inner toe shortest. Tail graduated, rigid: the inner web broad, and abruptly sinuated at the end (*h*); outer web very narrow: tips of the shafts hard and naked, as in *Dendrocolaptes*. S. America.

*O. ornatus*. Part 5. No. 131. *australis*. Lath. Syn. iv. pl. 52.

**DENDROCOLAPTES**, Illiger. Bill of various forms. Feet short (*fig. 75*. Vol. I. p. 139.). The outer and middle toes of equal length, and connected to the first joint; inner toe much shorter, almost free; hinder toe equal to the inner. Anterior claws equal; hinder larger. Tail cuneated, very stiff; the tips of the shafts hard, horny, and acute. Tropical America only.



*Dendrocolaptes* proper. (*fig. 281. a*) Bill lengthened, strong. Culmen slightly arched, and gradually inclined to the tip; the sides compressed the whole length from the nostrils. Tarsus short, strong. Two external toes longer than the tarsus; hinder toe slightly shorter. The conirostral type.

*D. decumanus*. Spix, i. 37.

*Ziphorynchus*, Sw. (*fig. 281. b*) Bill lengthened, slender; both mandibles considerably curved, typically falcated;

the sides compressed from the nostrils. Wings rather lengthened; the second quill hardly shorter than the third. Tarsus short, slender, of equal length with the two external toes. Hinder toe shorter than the tarsus. Tongue cartilaginous, flat, as long as the bill. The fissirostral type.

*Z. procurvis*. Pl. Col. 23. *bivittatus*. Spix, i. 90. f. 1.

*Dendrocops*, Sw. (*fig. 281. c*) Bill lengthened, nearly straight; the sides widened, quadrangular; the base broader than high: the tip of the upper mandible abruptly deflexed over that of the lower, and obsoletely notched. The dentirostral type.

*D. platyrostris*. Spix, i. 89.

*Sittasomus*, Sw. (*fig. 281. d*) Bill short, weak, resembling that of a *Sylvia*; rather widened at the base, beyond which the margin of the upper mandible is inflected. The hind claw is longer than the toe, and nearly straight. The tenuirostral type.

*S. sylviellus*. Pl. Col. 72. f. 1.

*Dendroplex*, Sw. (*fig. 281. e*) Bill moderate, very straight, perfectly conic in profile; the sides much compressed. Tongue very long, vermiform; extending, when thrown out, to more than twice the length of the bill; the tip hard, acute. The scansorial type.

*D. guttatus*. Spix, i. 91. f. 1.

**SCLERURUS**, Sw. (*fig. 76. Vol. I. p. 42.*) Bill lengthened, compressed. Commissure and under mandible straight. Culmen of the upper mandible bent towards the tip, and reflected over the lower, where it is distinctly notched. Wings moderate, rounded; the first and second quills graduated; the three next equal, and longest. Tail very broad, soft, and rounded; the tips obtuse, but with the shafts very rigid, and slightly projecting. Feet large, rather strong. Middle toe longest, united to the outer for half its length; inner toe much shorter than the outer, connected at the base to the middle toe; hind toe and tarsus

equal. Anterior claws fully curved; hinder claw long, more straightened. South Am.

*S. albugularis*. Braz. B. ii. pl. 78. *ruficollis*. Ib. ii. pl. 79.

**FURNARIUS**, Vieillot. (*fig. 280. f, g*) Bill lengthened, more or less curved, much compressed; the margins inflected in the middle: the tip of the upper mandible bent over the lower, and entire, or with an obsolete notch. Commissure slightly curved. Nostrils large, depressed; the aperture naked and oval. Frontal feathers advancing very far on the bill. Gape smooth. Wings rather short, rounded. Tail rounded, broad; the tips sometimes cuspidate, rarely pointed, but always soft. Feet large, strong, ambulating. Lateral toes equal, or very nearly so, and with all the joints free. Claws moderately curved. Hinder toe and claw very strong; much longer than the lateral toes. South America only.

*F. melanotis*. Part 5. No. 132. *leucopus*. Part 5. No. 133. *griseus*. Ib. No. 134.

SUBFAM. ANABATINÆ. *Tree-Runners*.

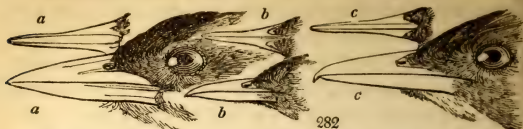
Bill rather short, strong, straight. Tail cuneated and stiff; but the tips of the shafts do not project beyond the webs. Toes moderate: middle toe always longer than the lateral; and all are more or less free. The subtypical division. S. America only.

**GEOBATES**, Sw. (*fig. 280. d, e*) Bill short, straight, entire, resembling *Synallaxis*. Wings rather lengthened; the first quill rather shorter than the three next, which are equal, and the longest; tertials broad, lengthened, nearly as long as the primaries. Tail short, rounded. Feet slender, ambulating. Tarsi lengthened. Claws small, and but slightly curved (*fig. 280. d*). Lateral toes unequal; the inner shortest, and cleft to the base; the outer united to the middle for half its length; hallux, or hinder toe, of the same length as the outer toe.

N. B. — The structure of the feet separates this type from *Furnarius*, which it seems to represent in this group.

*G. brevicauda*. Part 5. No. 126.

SYNALLAXIS, Vieill. (*fig. 282. b*) Bill short, rather strong,



straight: both mandibles of equal thickness, entire, and much compressed; the margins of the upper inflexed beyond the nostrils. Frontal feathers rather rigid. Wings very short, and much rounded; the primaries scarcely exceeding the tertials. Tail broad, more or less lengthened, and either graduated or cuneated; the webs soft and loose, but the shafts rather rigid; the tips lanceolate. Feet very large. Tarsus lengthened. Middle toe longer than the hinder; lateral toes equal. Claws slender, acute, and but slightly curved; the three anterior rather small.

*S. garrulus*. Z. Ill. i. pl. 138. *cinnamominus*. Spix, i. pl. 85. f. 2.

DENDROMA, Sw. (*fig. 282. c*) Bill straight, entire, much compressed; the culmen straight, but the tip suddenly bent down and inflexed over that of the lower mandible. Wings moderate, rounded. Tail somewhat stiff, lengthened, graduated, and very obliquely pointed. Tarsus longer than the middle and the hind toes. Lateral toes unequal, the inner shortest; hind and middle toes of equal length. All the claws moderate and broad, and fully curved. The toes more or less free.

*D. caniceps*. Braz. Birds, pl. 80.

ANABATES, Temminck.\* (*fig. 282. a*) Bill strong, very straight, greatly compressed, conic when viewed in profile: the tip not inflexed: the culmen and gonyes equally inclining towards the tip. Commissure straight. Wings very short, rounded. Tail somewhat stiff, lengthened, graduated; the feathers broad, but with the tips pointed. Tarsus shorter than the

\* This is not strictly *Anabates* of Temminck, who includes under that name three out of the five genera of this subfamily.

middle and hind toes, which are of equal length. Lateral toes unequal, the inner shortest, and both (typically) cleft to the base. Hinder claw very large; and all the rest fully curved.

*A. subcristata.* Sw. Braz. Birds, pl. 81.

**ZENOPS**, Illiger. (*fig. 74.* Vol. I. p. 137.) Bill short; the culmen very straight; but the commissure, and particularly the under mandible, curving upwards. Wings rather lengthened, rounded. Tail moderate, rounded, slightly stiff; the feathers obtusely pointed. Tarsus very short. Middle and hinder toes longer than the tarsus; lateral toes unequal, the inner shortest, and both slightly connected at their base; hinder toe shorter than the middle; its claw shorter than the toe. The fissirostral type.

*Z. genibarbis.* Zool. Ill. i. pl. 100.

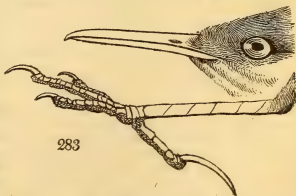
SUBFAM. SITTINÆ. *Nuthatches.*

Bill very straight, more or less cylindrical. Wings long, pointed; the first quill hardly shorter than the second. Tail very short. Hind toe as long as the middle. The fissirostral division.

**SITTELLA**, Sw. Bill very straight; the gonys curving upwards; the sides greatly compressed: tip of the upper mandible distinctly notched. Wings longer than the tail. Tail very short, even. Feet large, resembling those of *Sitta*. Australia.

*S. chrysoptera.* Lath. Supp. 2. pl. 127.

**GEOSITTA**, Sw. (*fig. 283.*) Bill longer than the head, trigonal at the base, cylindrical beyond. Culmen rounded. The tip of the upper mandible entire, broader than high, and slightly bent over the lower. Wings long, pointed; the first quill nearly equal to the second and third, which



are longest ; tertials lengthened. Tail slightly forked. Feet slender. Anterior toes rather short ; the lateral ones unequal, the claws small ; hind toe as long as the middle toe, but shorter than the tarsus ; the claw much lengthened, and slightly curved. Chili.

G. anthoides. Part 5. No. 129.

**SITTA**, Linnæus. (*fig. 72. Vol. I. p. 136.*) Bill moderate, very straight, cuneated, somewhat cylindrical ; the tip not deflexed, and entire. Nostrils entirely concealed by tufts of incumbent feathers. Wings long ; the first quill spurious ; the second slightly shorter than the third, fourth, and fifth, which are equal, and longest. Tail short, soft, even. Feet short, strong. Claws very large, particularly the hinder one ; the three anterior cleft to their base. Lateral toes very unequal ; the outer one not much shorter than the middle, the inner very short : hinder toe much longer than the middle, and equal to the tarsus ; the claw much shorter than the toe. All the claws strong, broad, and fully curved.

S. Europæa. Selby, pl. 39. Canadensis. Wils. 2. f. 4.  
Carolinensis. Wils. 2. f. 2. pusilla. Ib. 15. f. 2.

**DENDROPHILA**, Sw. General structure of *Sitta* ; but the nostrils are large, oval, open, and almost entirely naked ; the base of the bill widened ; and the tip of the culmen is inclined downwards. India only.\*

D. flavipes. Part 5. No. 130. frontalis. Zool. Ill. i. pl. 2.

**CLIMACTERIS**, Temminck. (*fig. 73. Vol. I. p. 136.*) Bill moderate, very slightly bent, compressed, entire. Wings lengthened, rounded ; the first quill spurious, the second and third graduated, the fourth longest. Tail very broad, soft, slightly rounded ; the feathers obtuse. Feet short. Toes enormously long : middle

\* I do not believe that either of these two birds exhibit, in perfection, the typical characters of this genus, which, from theory, I suppose to intervene between *Climacteris* and *Sitta*. I have, therefore, had some hesitation in proposing the group. The weaker structure of the bill, however, and the nakedness of the nostrils, prove that the habits of these Indian birds must be different from those of the more powerful nuthatches, where the culmen is straight even to its very tip, and the nostrils are entirely concealed.

toe equal to the hinder ; outer toe shorter than the middle, and connected to it at its base ; inner toe much the shortest, almost free. All the claws slender, and much curved. Australia, 2.\*

*C. auricomis*. Pl. Col. 281. *mystacalis*. Pl. Col. 335.  
f. 2. male ; 1. female.

SUBFAM. TROGLODYTINÆ. *Wrens*.

Feet with the tarsus longer than the hind toe, which is but slightly developed. Lateral toes nearly equal, and cleft to their base. The tenuirostral division.

**PLATYURUS**, Sw. Bill moderate, straight, compressed ; very high at the base of the culmen, which is there slightly gibbous, and divides the frontal feathers. Upper mandible distinctly notched. Nostrils very large, basal, protected by a scalelike convex membrane. Frontal feathers stiff, setaceous, narrow, and sometimes reflected forwards. Wings remarkably short and rounded, very convex. Tail (typically) lengthened and graduated ; the feathers very soft and broad. Feet very large. Middle toe as long as the tarsus ; lateral toes equal, and cleft at their base ; hind toe shorter than the tarsus. All the claws compressed, and but slightly curved ; the three anterior small ; the posterior twice as long. South America.

*P. corniculatus*. Braz. B. pl. 55. *rubecola*. Braz. B. pl. 14.  
*affinis*. Ib. pl. 57. (aberrant.)  
*niger*. Part 5. No. 128. *lepturus*. Kittlitz. pl. 5.

**THRYOTHURUS**, Vieillot. Bill lengthened, much longer than the head, compressed, straight, or very slightly curved : the tip of the upper mandible slightly reflexed, and obsoletely notched ; the base rather broad. Wings and tail moderate, rounded. Feet large, strong. Tarsus lengthened, much longer than the hind toe, but equal to the middle one. Lateral

\* The authors of the *Pl. Col.* have been singularly unfortunate in illustrating this genus : their *C. scandens* and *picumnus* are only the sexes of one species (my *auricomis*) ; while their *Meliphaga mystacalis* has all the characters of a true *Climacteris*.

toes equal. Hind claw nearly double the size of the anterior ones : all the claws fully curved. America.

Ludovicianus. Wils. pl. 12. f. 5. rutilans. Braz. B. pl. 14.  
striolatus. Braz. B. pl. 16. Mexicanus. Z. Ill. ii. pl. 11.  
rectirostris. Z. Ill. i. pl. 140. genibarbis. Part 5. No. 127.

**TROGLODYTES**, Linn. (*fig.* 71. Vol. I. p. 135.) Bill short, slender, compressed, like that of a *Sylvia*. Both mandibles entire. Wings very short, and rounded. Tail short, narrow, rounded. Legs moderate. Toes long ; middle toe as long as the tarsus ; lateral toes equal ; hinder toe shorter than the tarsus. Anterior claws small, equal ; posterior claw much larger : all the claws broad, and fully curved. Europe, America. T. Europæus. Selby, pl. 47. f. 5. equinoctialis. Braz. B. pl. 13.

**LOCHMIA**, Sw. Bill moderate, nearly straight ; the culmen gently inclining towards the tip, which is entire ; the gonys straight. Wings short, rounded ; the first and second quills graduated. Tail soft, short, slender, rounded ; the tips ovate, but, with the shaft, forming a fine soft point beyond the webs. Tarsus lengthened. Middle toe longest ; lateral toes much shorter, and very unequal ; the outer longest, and slightly connected to the middle ; inner toe shortest, and cleft to the base ; hinder toe shorter than the tarsus. All the claws slightly curved. Brazil. L. squamulata. Sw. Braz. Birds, i. pl. 33.

**TICHODROMA**, Illiger. Bill very long, slightly arched, cylindrical ; the base angulated ; the tip depressed. Nostrils naked. Feet long and slender. Exterior toe united to the base of the middle ; hinder toe, with the claw, very long. Wings lengthened, broad ; the first quill spurious, the second and third graduated, the three next longest. Tail short, round, broad, and soft. Europe.

T. muraria. Pl. Enl. 372.

SUBFAM. BUPHAGINÆ. *Oxpecker.*

Bill very short. Tail moderate, rigid. Wings moderate. All the toes divided to their base. The scansorial division.



**BUPHAGA**, Latham. *Oxpecker*. Bill thick, strong, slightly compressed: the inferior mandible much thicker than the upper, particularly at its base, where it is somewhat dilated. Culmen slightly elevated, and gradually arched from the base. Frontal feathers advancing to one half the length of the upper mandible. Wings rather long, and pointed. Tail cuneated; the feathers lanceolate and stiff. Feet strong (*fig.* 78. Vol. I. p. 144.). Tarsus very short. Lateral toes equal. All the claws large, broad, and remarkably hooked. Africa only.

B. *Africana*. Pl. Enl. 379. *erythroryncha*. P. Col. 465.

**ORTHO NYX**, Temminck. (*fig.* 77. Vol. I. p. 143.) Bill very short, straight, but the culmen arched from the base; the sides considerably compressed. Nostrils large, basal. Wings moderate, but considerably rounded; the four first quills graduated, and shorter than the fifth. Tail rather lengthened, rounded; the feathers very broad, and the webs soft, but the shafts stiff, very rigid, and terminating in naked points. Feet enormously large and strong. The outer toe rather longer than the middle, which is again longer than the inner toe; hinder toe shorter than the middle. Tarsus longer than either of the toes. Claws strong, very slightly curved; the anterior all of the same length; the hinder one longest. Australia only.

O. *spinicaudus*. Pl. Col. 428, 429.

#### FAMILY CUCULIDÆ. *The Cuckows.*

Bill slender. The external hind toe capable of being brought half way forward.

##### SUBFAM. CUCULINÆ. *Parasitic Cuckows.*

Wings pointed. Nostrils round. Bill slender, convex above. The tarsus very short. (*fig.* 284.)

**CUCULUS**, Linn. (*fig.* 284. *a*) Bill broad at the base; the upper mandible obsoletely notched: culmen convex. Nostrils circular. Wings long, pointed; the third



quill longest. Tarsus very short, feathered. The Old World.

*C. canorus*. Selby, pl. 45\*\*\*. f. 1.

**OXYLOPHUS**, Sw. (*fig. 284. b*) Head crested. Bill slender, considerably and suddenly compressed from the nostrils, which are ovate: upper mandible entire. Wings moderate, rather pointed; the fourth quill longest. Tropics of the Old World.

*O. Vaillantii*. Z. Ill. ii. 13. *edolius*. O.d'Af. v. 207.

**ERYTHROPHRYS**, Sw. Head not crested. Nostrils oval. Wings lengthened, pointed, extending beyond the tail covers; the third quill longest; the second much shorter than the fourth. Tarsus moderate, naked. America: rear their own young.

*E. Carolinensis*. Wilson, iv. 23. f. 1.

**CHALCITES**, Lesson. (*fig. 284. c*) Plumage shining metallic green. Bill and general structure of *Cuculus*. Tarsus very short, almost entirely plumed. Rump and upper tail covers soft. The Old World.

*C. auratus*. O. d'Af. v. p. 210, 211. *Vaillantii*. W. Af. ii.

**EUDYNAMYS**, H. and V. Bill strong, thick; the under mandible not curved: the gonys distinctly angulated: upper mandible entire. Wings pointed. Feet very strong. The Old World.

*E. orientalis*. Pl. Enl. 274. f. 1. *australis*. Part 5. No. 189.

SUBFAM. COCCYZINÆ. *Hook-billed Cuckows*.

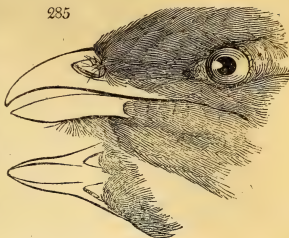
Wings short, rounded. Nostrils linear. Bill curved.

Margins of the upper mandible dilated. Tarsus naked, lengthened. Tail very long, cuneated.

SERISOMUS, Sw. (*fig. 285.*)

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Bill short, strong: the gonys thick, ascending, and angulated: the culmen thickened and arched. Tarsus and middle toe equal; lateral toes unequal. Claws short. Africa.



*S. cristatus.* Pl. Enl. 589.

ZANCLOSTOMUS, Sw. (*fig. 284. d, e*) Bill much compressed its whole length. Gonys curved downwards. Culmen and upper mandible greatly curved; the basal margin considerably dilated. Wings, tail, and feet as in the last genus, but the lateral fore toes are nearly equal. Tropics of the Old World.

*Z. Javanicus.* Horsf. Java.

COCCYZUS, Vieillot. (*fig. 284. f*) Bill moderate, thickened at the base, compressed. Gonys straight. Basal margin of the upper mandible not curved outwards, and scarcely dilated. Tarsus and middle toe of equal length. Lateral fore toes unequal. America only.

*C. cayanensis.* Pl. Enl. 211.

PTILOLEPTUS, Sw. Wings very long. Bill intermediate in form between *Coccyzus* and *Centropus*. Nostrils long, linear. Feathers of the head and neck slender and rigid. Tarsus and middle toe equal; lateral toes unequal. All the claws curved, and of equal size. Tail of eight feathers. Habits terrestrial. South America.

*P. cristatus.* Vicil. Gal. pl. 44.?

CENTROPUS, Illiger. (*fig. 284. g*) Bill strong. Tarsus and middle toe equal. Anterior claws slender, slightly curved; hinder one very long, and nearly straight.

*C. Senegalensis.* Pl. Enl. 332. *Burchellii.* Part 5. No. 128.

SUBFAM. CROTOPHAGINÆ. *Hornbill Cuckows.*

**CROTOPHAGA**, Linn. Bill very broad on the sides. The culmen high, and forming an elevated ridge or keel which divides the frontal feathers.

sulcirostra. Part 5. No. 124.

rugirostra. Ib. No. 123.

lævirostra. Ib. No. 122.

semisulcata. Ib. No. 194.

**DASYLOPHUS**, Sw. (*fig. 286. a*) Bill rather large, compressed its whole length. Gonys angulated. Culmen convex, gradually arched. Frontal feathers incumbent, and concealing the nostrils. Feathers before the eye erect, forming a double crest.

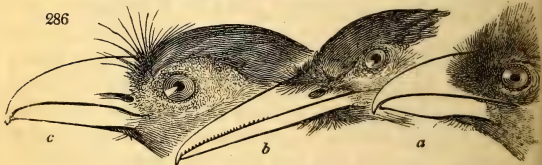
D. superciliosus. Sw.

**PHÆNICOPHÆUS**, Vieillot. (*fig. 286. c*) Bill large, very thick, smooth, resembling that of a toucan in miniature. Face naked. Nostrils basal, oval, close to the rictus. placed in a groove of the bill, and defended by stiff erect bristles.

P. viridis. O. d' Af. pl. 225.

pyrrhocephalus. Vieil. Gal. pl. 37.

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SUBFAM. LEPTOSTOMINÆ. *Long-billed Cuckows.*

**SAUROTHERA**, Vieillot. (*fig. 286. b*) Bill lengthened, longer than the head, straight, except towards the tip: the culmen convex. Gonys straight. The upper mandible with its margins finely crenated. Orbits naked. Wings moderate; the second and third quills the longest. Feet short. (*Vieillot.*)

S. velata. Vieil. Gal. pl. 38.

**ANADÆNUS**, Sw. General structure of *Saurothera*; but the upper mandible is only notched at the tip: the margins entire. Wings much rounded; the four first quills graduated. India.

A. rufescens. Part 5. No. 193.

LEPTOSTOMA, Sw. Bill very long, entire. Wings very short, and rounded. Tail long, cuneated. Tarsus much longer than the toes. (*fig.* 172. p. 40.)

*L. longicauda*, Sw. (1824). ? the *Sauroth. Bottæ* Blainv.

SUBFAM. INDICATORINÆ. *Honey Guides*.

Bill short, subconic. Feet very short.

INDICATOR, Le Vaillant. Bill straight, finch-like; the base triangular; the sides compressed. Culmen and gonys equally inclined towards the tip; gonys angulated. Wings lengthened, pointed. Tail moderate, rounded. Feet short. Middle toe much longer than the tarsus.

*I. major*. O. d' Af. 241. f. 1, 2.      *flavirostris*. Pl. Col. 367.  
*minor*. Ib. 242.      *flavicollis*. Vieil. Gal. 46.

OPISTHOCOMUS\*, Hoffmannseg. Bill thick, robust, short, convex; the base laterally dilated; the sides abruptly compressed: the under mandible strong. Gonys angulated. Nostrils placed in the middle of the bill, membranaceous. Feet robust, muscular. Tarsus shorter than the middle toe. Lateral toes long, equal, entirely cleft to their bases. Soles of the feet flat. The toe bordered by a rudiment of a membrane. Wings moderate; the first quill very short, the four next graduated, the sixth longest. South America. (*Tem.*)

*O. cristatus*. Pl. Enl. 337.

#### TRIBE IV. TENUIROSTRES. *Suctorial Birds*.

##### FAMILY MELIPHAGIDÆ. *Honey Suckers*.

Bill the strongest in this tribe, having the upper mandible distinctly notched. Feet large, strong: the hinder toe much developed. Tongue extensible, generally ending in a bunch of filaments.

\* The situation of this singular genus is very uncertain. From not having a specimen for close inspection, I have taken the above characters from M. Temminck.

**MELIPHAGA**, Lewin. Bill moderate or short, weak : the under mandible not thickened. Lateral toes unequal ; the inner the shortest. Tail rounded or graduated. Tongue bifid ; each division ending in numerous filaments.

*Meliphaga*. Bill lengthened, as long or longer than the head. Wings rounded ; the sixth quill longest. Middle toe longer than the hallux ; the inner toe considerably shorter than the outer. Tail rounded.

\* *M. barbata*. Ois. dor. pl. 57. Australasiana. Ib. pl. 55.

*Ptilotis*, Sw. Bill short. Lateral toes almost equal. Tail slightly rounded, sometimes nearly even. Leads to *Glyciphila*.

*P. Lewinii*. Lew. Bds. pl. 5. *leucotis*. Lew. Bds. pl. 20.

*Zanthomiza*, Sw. Bill moderate, much curved : the culmen considerably arched. Face naked. Middle toe longer than the hallux. The tenuirostral type.

*Z. Phrygia*. Shaw. Zool. of N. H. pl. 4.

*Anthochæra*, Horsfield and Vigors. Size large. Bill short. The nostrils extending half way from the base. Lower jaw with naked caruncles. Tail long, graduated. Middle and hinder toes of equal length. The rasorial type.†

*A. carunculata*. White's Voy. pl. 6.

**GLICIPHILA**, Sw. Habit of *Meliphaga*. Bill either shorter, or slightly longer, than the head : the notch in the upper mandible far removed from the tip. Tongue rather short, terminated by numerous filaments. The third and three following quills longest, and nearly equal. Lateral toes equal. Tail even.

*G. fulvifrons*. Lewin, N. H. Birds, pl. 22.

**ANTHOMIZA**. Habit of *Meliphaga*. Bill rather short. Tongue ————? Wings much rounded ; all the

\* The *Certhia Novæ Hollandiæ* of the old authors, and of which the modern *Meliphaga sericea*, I am led to believe, is but a sexual difference.

† I hardly think it advisable to discriminate these subordinate types by subgeneric names ; but as that of *Anthochæra* has been already done, I have designated what appear to me to be three of the others : the fifth I am unacquainted with.

quills more or less terminating in points. Tail forked. Lateral toes equal. The fissirostral type.

*A. cœruleocephala*. Mus. Carl. i. pl. 5.

**LEPTOGLOSSUS**, Sw. Habit of *Cinnyris*. Bill remarkably long, slender, and curved. Tongue retractile, long, bifurcated, as in *Trochilus*. Lateral toes unequal. Tail nearly even. The tenuirostral type.

*L. cucullatus*. Ois. dorés. pl. 60.

**PTILOTURUS**, Sw. Bill much lengthened, slightly curved: the upper mandible dilated, and folding over the base of the under; the margins of both inflected towards their tips. Nostrils lengthened; the aperture linear. Wings moderate, rounded: the first quill spurious; the four next very broad at their base, and emarginate at the inner web. Lateral claws unequal. Tail very long, graduated; the middle feathers lax, and narrow. The rasorial type.

*P. Capensis*. Le Vaill. Af. vi. pl. 287, 288.

**MANORINA**, Vieillot. Bill short, robust: the under mandible thickened. Culmen arched, and much elevated from the base, considerably compressed its whole length. Commissure curved. Upper mandible notched near the tip.

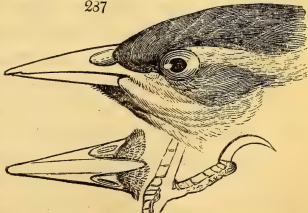
*M. viridis*. Ill. of Orn. pl. 78.

**Gymnophrys**, Sw. Bill short, subconic: the culmen scarcely curved; the sides compressed; the commissure straight. Notch in the upper mandible remote from the tip. Tail even; lateral. Claws unequal.

*G. torquatus*. Lewin, N. H. Birds, pl. 24.

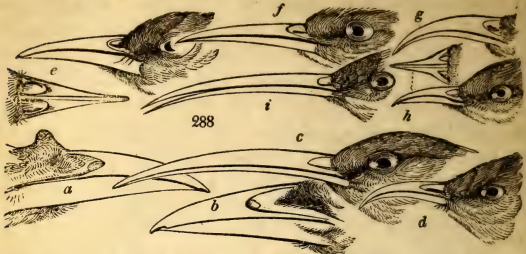
**Eidopsarus**, Sw. Bill moderate, subconic, depressed its whole length, as in *Sturnus*. Culmen flattened, with the base advancing very far on the front. Commissure straight, but angulated at its base. Upper mandible remotely

237



notched. Tail even. Legs pale. Lateral claws nearly equal. Tongue as in *Meliphaga* proper. (fig. 287.)

*E. bicinctus*. Part 5. No. 188. (fig. 287.)



**ENTOMIZA**, Sw. (fig. 288. b) Bill strong, moderate : culmen much elevated. Nostrils large, naked ; the aperture large, oval, and placed in the middle of the bill, at the termination of the naked membrane. Culmen obtuse, convex. Frontal feathers small, compact. Hind toe and claw very large, and as long as the middle toe.

*E. cyanotis*. Lewin, N. H. Birds, pl. 4.

**PHILEDON**, Cuvier. (fig. 288. a) Culmen sharp, crenated. Head and face naked. Front with an elevated protuberance. Hind toe and claw shorter than the middle.

*P. corniculatus*. White's Voy. pl. 16. buceroides. Part 5.

**MYZOMELA**, Horsfield and Vigors. (fig. 288. d) Bill with both mandibles very considerably curved ; the sides broad, and much compressed. Tongue and nostrils as in *Meliphaga*. Wings lengthened ; the third, fourth, and fifth quills equal. Tail short, even. Middle toe much longer than the hinder lateral toes equal.

*M. cardinalis*. Lewin, N. H. Birds, pl. 19.\*

**ARACHNOTHERA**, Tem. (fig. 288. c) Bill very long, more or less curved : the upper mandible large, folding over and partly concealing the base of the lower mandible : the base broad, and three-sided ; the tip

\* Can this be the fifth subgenus of *Meliphaga* ? or an aberrant *Melithreptes* ?



entire. Nostrils small, oval, completely covered by a membrane, which only opens by a lateral semi-circular slit. Wings long; first quill spurious, second and third graduated. Tail short, even. Legs large; strong. Lateral toes unequal. India only

A. flavigenis. Pl. Col. 388. f. 1.

FAMILY CINNYRIDÆ. *Sunbirds.*

Wings with the outermost quills more or less shortened or graduated. Bill more or less curved, generally entire. Nostrils short, oval, membranaceous, opening by a lateral slit. Feet moderate. Bill entire.

MELITHREPTES, Vieillot. (*fig. 288. g*) Bill long, sickle-shaped; the sides considerably compressed: the culmen elevated, and the tips entire. Nostrils very short, opening by a semicircular slit. Tongue long; the tip only terminated by a bunch of short filaments. Wings moderate; the three first quills nearly equal. Feet robust, long. Lateral toes equal. Tarsus almost twice as long as the hind toe. Pacific Islands.

M. pacifica. Ois. dorés, pl. 63.

CINNYRIS, Cuvier. (*fig. 288. i*) Bill long, slender; the tips very acute and entire; the margins minutely denticulated: base of the upper mandible folding over, and partly concealing that of the lower. Nostrils short, oval. Tongue retractile, simply forked. First quill spurious, second shorter than the third. Tail even or rounded. India and Africa.

C. chalybea. Zool. Ill. i. 95.

ANTHREPTES, Sw. (*fig. 288. f*) Bill moderate, rather strong, slightly curved; widening towards the base, which is much broader than it is high. Base of the under mandible thickened, and not partially covered by the upper. Wings, feet, and tail as in *Cinnyris*.

A. Javanica. Zool. Ill. i. pl. 121.

NECTARINIA, Illiger. (*fig. 288. e*) Bill in general shorter than the head, wide at the base, compressed from the

nostrils. Tip of the upper mandible with a distinct notch; the margins entire. Wings long; the three first quills nearly equal. Lateral toes unequal. South America only.

N. cyanocephala. Zool. Ill. i. pl. 117.

DICEUM, Cuvier. (*fig. 288. h*) Bill short, remarkably broad at the base, and suddenly compressed beyond; the tips entire; the margins minutely denticulated. Nostrils triangular. Wings, feet, and tail as in *Nectarinea*. Indian and Australian Islands.

D. sanguinea. Lewin, N. H. Birds, pl. 7.

FAMILY TROCHILIDÆ.\* *Humming Birds.*

Wings excessively long, falcated. Feet very small.

LAMPORNIS, Sw. Bill straight, or very slightly bent; generally pale; considerably depressed for its whole length, but more especially at the base. Wings reaching to the end of the tail, which is short and even.

L. mango. Brazil Birds, i. pl. 27, 28.

TROCHILUS, Auctorum. Bill very straight, long, cylindrical, or rather broader than high. Tail generally even, but sometimes slightly forked.

T. longirostris. Auct.

CYNANTHUS, Sw. Bill cylindrical, more or less curved. Tail forked.

C. forficatus. Auct.

PHÆTHORNIS, Sw. Bill considerably compressed, generally curved from the base. Tail graduated, or cuneated. Colours less brilliant. The rasorial type.

P. superciliosus. Auct.

CAMPYLOPTERUS, Sw. Bill curved. Shafts of the quills dilated. Tail graduated.†

C. recurvirostris. Zool. Ill. i. pl. 105.

\* The typical characters alone are given of what I consider to be the primary groups; but as the circular succession of the subgenera in each is a subject which requires more investigation than I have yet been able to give it, I shall not attempt to impose names upon the minor groups, which cannot as yet be properly demonstrated.

† The rank of this group is very uncertain. I am inclined to think that the *Trochilus recurvirostris* is the type of the gallatorial division of this family; but this is mere conjecture.

SUBFAM. PROMEROPIDÆ. *Hoopoes.*

Feet syndactyle. The outer toe united for half its length to the middle. Bill very long, greatly compressed.

PROMEROPS, Brisson. Bill with the under mandible, at its base, thicker than the upper; the margins acute. Nostrils corneous; the aperture lateral and oval. Hind claw curved. Tail long, cuneated.

*P. erythrorynchus.* Ois. dorés, pl. 6.

UPUPA, Lin. Bill lengthened, greatly compressed. Nostrils round, destitute of any membrane either above or behind. Hind claw nearly straight. Tail short, even.

*U. epops.* Selby, pl. 40.

EPIMACHUS, Cuv. Bill resembling that of *Promerops*; but the margins are obtuse, and somewhat inflexed. Wings, tongue, and feet unknown. Tail very long. Side feathers of the body greatly developed.

*E. superbus.* Ois. dorés, p. 18.

SUBFAM. PARADISIADÆ. *Paradise Birds.*

Bill generally notched. Size large. Hypochondrial feathers greatly developed.

PTILORIS, Sw. Bill greatly curved. Nostrils basal, plumed; the aperture linear. Wings rounded. Tail short, even. Tarsi short. Toes as in *Meliphaga*: hallux very strong, equal to the tarsus, and to the middle toe. Soles flat and broad.

*P. paradiseus.* Zool. Ill. i. 481. Ill. of Orn. pl. 43, 44.

PARADISEA, Sw. Bill strong, conic. Culmen convex, the sides compressed, the tip notched. Nostrils apparent. Feet strong, syndactyle, resembling those of *Promerops*. Tarsus short. Outer and middle toe nearly of the same length; inner toe very short, but longer than the hallux, which is also shorter than the tarsus. Claws very strong, and hooked.

*P. rubra.* Vieil. Gal. pl. 99.

CICINNURUS, Vieill. Bill less robust; the tip notched.

Nostrils entirely concealed by incumbent feathers. Hypochondrial feathers broad, compact, with truncated ends. Feet ——?

*C. regius.* Vieil. Gal. pl. 96.

**PAROTIA**, Vieil. Bill slender, covered by soft feathers, directed upwards, for near two thirds its length. Nostrils concealed. Feet and wings unknown.

*P. sexsetacea.* Vieil. Gal. pl. 97.

**LOPHORINA**, Vieil. Interscapulars excessively developed. A very doubtful type.

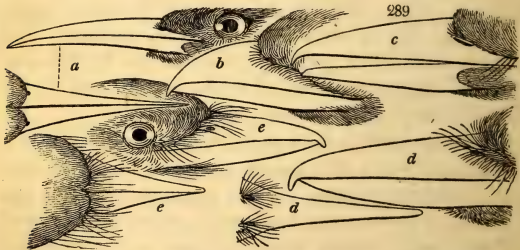
*L. superba.* Vieil. Gal. pl. 98.

### TRIBE V. FISSIROSTRES. *Fissirostral Birds.*

Feet of different constructions, but always short, and generally very weak and imperfect. Gape of the mouth very wide. Feed upon insects, caught during flight.

#### FAMILY MEROPIDÆ. *Bee-eaters.*

Wings long, pointed; the first quill as long, or nearly so, as any of the others. (*fig. 289.*)



**MEROPS**, Lin. (*fig. 289. a*) *Bee-eater.* Bill very long, slender, slightly curved, compressed: the culmen carinated; the tip entire, sharp, and not bent downward. Wings long, pointed; the tips of the lesser quills emarginate. Tail lengthened. Feet gressorial.

*M. apiaster*. Selby, pl. 41.

*urica*. Zool. Ill. i. pl. 8.

*Javanica*. Horsf.

*Savignii*. West. Af. ii.

**NYCTIORNIS**, Sw. Bill considerably curved, very long : the culmen with a parallel groove on each side. Wings rounded, convex. Plumage lax. Feet short, insessorial, resembling those of *Prionites*.

*N. amictus*. Zool. Ill. ii. pl. 56. *cæruleus*. Ill. Orn. ii. pl. 58.

**CORACIAS**, Linn. *Roller*. (*fig. 289. c*) Bill moderate, straight ; the sides broad, but much compressed. The tip of the upper mandible bent over that of the lower, which is obliquely truncate. Nostrils basal, oblique, linear. Gape very wide, extending beneath the eye ; the sides bristled. Feet insessorial, very short. All the toes cleft to their base ; inner toe much the shortest. Wings moderate, pointed.

*C. Abyssinica*. Pl. Enl. 626.

*Eurystomus*, Vieil. (*fig. 289. b*) Resembling *Coracias* ; but the bill is shorter and wider, and the wings longer. Nostrils very long. Rictus smooth.

*E. Orientalis*. Part 5. No. 137. *Australis*. Part 5. No. 136.

**CHLOROPYGIA**, Sw. General form between *Tamatia* and *Coracias*. Bill short ; the tip not abruptly bent. Rictus bristled. Nostrils basal, linear, oblique. Wings short, convex, reaching only to the rump. The two first quills much graduated ; the four next nearly equal, and longest. Tail elongated, rounded, and broad. Feet as in *Coracias*. Madagascar.

*C. leptosomus*. Lesson, Ill. Zool. pl. 22.

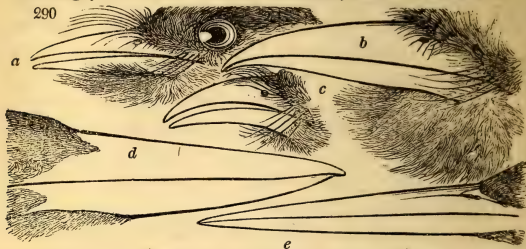
**LEPTOSOMUS**, Vieillot. Bill about the length of the head, robust. The upper mandible curved, and notched near the tip. Gonys straight. Nostrils oblong, oblique ; the margins elevated, naked, and placed towards the middle of the upper mandible. Feet short. Toes in pairs, as in *Tamatia*. Wings lengthened, pointed ; the first and second quills longest. Tail moderate, even. Madagascar, 1.

*L. viridis*. Vieil. Gal. 40. Pl. Enl. 587.

FAMILY HALCYONIDÆ. *Kingfishers.*

Wings rounded, not formed for rapid flight. Feet very feeble. Toes in pairs.

**TAMATIA.** Bill straight, compressed. Nostrils defended by long, stiff, incurved feathers and bristles. Rictus strongly bristled. Toes versatile, as in *Cuculus*.



*Tamatia*, Cuv. (fig. 289. e) Bill moderate, thick, conic; the tip but slightly bent. Tail narrow. Conirostral.

*T. maculata*. Braz. B. pl. 11. *bitorquata*. Part 5. No. 138.

*Capito*, Vieil. (fig. 289. d) Bill long; the tip abruptly bent, so as to form a hook. Tail narrow. Dentirostral.

*C. leucotis*. Braz. Bds. pl. 12. *somnolentus*. Ib. pl. 9.

*Lypornix*, Wagler. (fig. 290. a) Bill moderate, defended by very long bristles. Both mandibles nearly equal. Wings very short, rounded. Tail narrow. Tenuirostral.

*L. striata*. Braz. Bds. pl. 34. *rubicula*. Ib. pl. 35.

*Monassa*, Vieill. (fig. 290. b) Bill as in *Lypornix*, without the basal bristles, but with short setaceous feathers. Wings short. Tail lengthened, and very broad. Scansorial.

*M. leucops*. Brazil. Birds, pl. 12.

*Brachypetes*, Sw. (fig. 290. c) Bill as in *Lypornix*, but shorter, higher, and more curved; the margins greatly inflexed. Wings long. Tail short and even. Fissirostral. (fig. 291.)

*B. tenebrosa*. Braz. Birds, pl. 35.



**HALCYON**, Sw. Bill long, very straight, cylindrical; the sides widened; the base more or less depressed. Gonyes ascending. Feet syndactyle.

*Dacelo*, Leach. Margin of the upper mandible considerably sinuated near the tip. Wings lengthened; the quills slightly mucronate. Tarsus covered with rough scales. Australian range.

*D. gigantea*. White's Voy. pl. 2.

*Halcyon*, Sw. (*fig. 290. d*) Bill long, straight, broad, nearly quadrangular. Culmen slightly inclining towards the tip, near which the margin is slightly sinuated. Gape smooth. Wings broad, short, rounded. Tail very short. Feet syndactyle. Scales of the tarsus obsolete.

<i>H. cinnamomina</i> . Z. Ill. i. 67.	<i>lilacina</i> . Sonn. Voy. pl. 218.
<i>diops</i> . Pl. Col. 272.	<i>atricapilla</i> . Pl. Enl. 673.
<i>melanoryncha</i> . Ib. 391.	<i>capensis</i> . Ib. 590.
<i>omnicolor</i> . Ib. 135.	<i>collaris</i> . Z. Ill. i. pl. 27.
<i>Smyrnensis</i> . P. E. 894.	<i>sanctius</i> . Lin. Tr. xv. 206.
<i>ruficollis</i> . Sw. Ib. 232.	<i>leucocephala</i> . P. Enl. 757.
<i>concreta</i> . Ib. 346.*	<i>chlorocephala</i> . Ib. 783. f. 2.

*Syma*, Lesson. Differs from *Halcyon* in having the margins of both mandibles, for two thirds of their length, armed with numerous sharp and strong teeth.†

*S. Lessonia*. Sw. (*S. torotoro*. Voy. Coq. 31. bis. 2.)

*Todiramphus*, Lesson. Habit of *Halcyon*. Bill broad, and greatly depressed its whole length; the tips rounded, obtuse, and not inflexed. Gonyes ascending, but without a ridge. Culmen obsolete. Commissure perfectly straight. Nostrils, wings, tail, and feet as in *Halcyon*; but the scales are distinct. South Seas.

*T. sacer*. Less. Mém. Soc. d'Hist. Nat. iii. pl. 11.

*Ceyx*, Lacepede. Bill and general structure of *Dacelo*; but the inner fore toe is wanting.‡

*C. tridactyla*. Sonn. Voy. pl. 32.

**ALCEDO**, Linn. Bill very straight, compressed its whole length: the tip of both mandibles acute, and the

\* Add to these the species described in West. Af. Birds, vol. ii.

† This type I have never seen, and am, therefore, unable to add its other characters, or to determine whether it enters into this circle or the next.

‡ This type I have never seen.

upper one not inclined. Commissure perfectly straight. Feet syndactyle, all the tarsal scales obsolete.

*Alcedo*. (fig. 290. e) Tail very short. Feet with three toes before, and one behind. Claws simple. Culmen of the bill sharp, carinated, and simple. Inner and hinder toes of equal length. Inhabits only the Old World.

*A. ispida*. Selby, pl. 40. f. 1. Asiatica. Z. Ill. i. pl. 50.  
*semitorquata*. Z. Il. i. 151.

*Ispida*, Sw. Habit of *Alcedo*. Culmen obtuse, somewhat flattened, and margined on each side by an indented groove. Tail lengthened, rounded. Inner toe much longer than the hinder. Claws either deeply notched, or cleft so as to present two acute unequal points. Chiefly the New World.

*I. alcyon*. Edw. pl. 115. *gigantea*. West. Af. ii.  
*bitorquata*. West. Af. ii. *torquata*. Pl. Enl. 284.

*Tanysiptera*, Vigors. Bill depressed. Tail cuneated: the two middle tail feathers much elongated, with their tips spatulate. India.

*T. Dea*. Vig. Pl. Enl. 116.

*Alcyone*\*, Sw. Bill as in *Alcedo*; but the feet with only three toes. Australia.

*A. Australis*. Zool. Ill. i. pl. 26.

LAMPROTILA, Sw. Plumage metallic green and gold. Bill very broad, dilated: the commissure and culmen curved; the upper margins folding over the lower. Nostrils membranaceous; the aperture round, protected by feathers. Wings as in *Galbula*, but longer; the third and fifth quills equal.

*L. platyrincha*. Vieil. His. Nat. Jacamars. pl. 6.

GALBULA, Linn.† Plumage metallic. Bill very long, perfectly straight, greatly compressed: the culmen sharp; the tip not bent. Wings short. Tail lengthened, graduated. Toes in pairs, or with the hallux wanting. Nostrils with a few strong bristles.

\* As this is the only group in ornithology wherein mythological names have been tolerated, I have ventured to continue the metaphorical connection in this instance.

† I consider the three-toed species are the most typical, and that the others are aberrant, leading to *Lamprotila*.



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|-----------------------------|-------------------------------|
| G. armata. Part 5. No. 144. | viridicauda. Part 5. No. 140. |
| lugubris. Ib. No. 145.      | leptura. Ib. No. 141.         |
| paradisea. Edw. pl. 10.     | albiventer. Ib. No. 142.      |
| ruficauda. Part 5. No. 139. | flavirostra. Ib. No. 143.     |

FAMILY TROGONIDÆ. *The Trogons.*

Bill short, triangular, strong; the tips, and generally the margins, toothed. Wings very short. Rasorial.

**TROGON**, Linn. Both mandibles with their cutting margins serrated. The two anterior toes united as far as the first joint. Nostrils concealed by bristles. Tarsus entirely feathered. Tropical America. The dentirostral type.

- |                                   |                            |
|-----------------------------------|----------------------------|
| melanurus. Part 5. No. 146.       | lepturus. Part 5. No. 151. |
| auratus. Ib. No. 147.             | meridionalis. Ib. No. 152. |
| purpuratus. Ib. No. 148.          | melanopterus. Ib. No. 153. |
| chrysogaster. Ib. No. 149.        | elegans. Gould, Mon.       |
| leucurus. Ib. No. 150.            | ambiguus. Ib.              |
| Mexicanus. Z. I. ii. pl. 81. 107. | melanocephala. Ib.         |

**Harpactes**, Sw. Bill stronger: both mandibles deeply notched at their tips, but the margins smooth. Nostrils partially naked. Tarsus only half feathered. The anterior toes less united. Tropical Asia. The conirostral type.

- |                           |                          |
|---------------------------|--------------------------|
| Malabaricus. Gould, Mon.  | Temminckii. P. Col. 321. |
| erythrocephalus. Ib.      | Duvaucellii. Ib. 291.    |
| Gouldii. (Sw.) P. C. 121. | Diardii. Ib. 54.         |

**Apaloderma**, Sw. Bill as in *Trogon*, but the dentations almost obsolete. Feet stronger. The two anterior toes cleft to their base. Africa. The tenuirostral type.

- |                            |                            |
|----------------------------|----------------------------|
| A. Narina. Ois. d'Af. 228. | Reinwardii. Pl. Col. 124.* |
|----------------------------|----------------------------|

**Temnurus**, Sw. Bill as in *Trogon*. Tail feathers forked at their tips; the points diverging. South America. Feet——? the fissirostral type.

- |                              |
|------------------------------|
| T. albicollis. Pl. Col. 326. |
|------------------------------|

**Calurus**, Sw. Bill destitute of serratures. Head (typically) with a compressed and elevated crest. Upper

\* Neither MM. Temminck nor Gould mention any thing of the form of the feet; I am, therefore, doubtful if this is its true situation.

tail covers enormously developed, and hiding the tail. South America. The rasorial type.

*C. resplendens*. Gould, Mon. pavoninus. Spix, i. pl. 35.

**CRYPTICUS**, Sw.\* General structure of *Prionites*; but the bill excessively broad, flattened, and dilated at the base. Culmen arched, grooved in the middle; the cutting margins minutely and regularly serrated.

*C. platyrinchus*. Ill. of Orn. iii. pl. 106.

**PRIONITES**, Illiger. Both mandibles slightly curved and compressed; the margins with strong denticulations. Tongue long, slender; the sides ciliated. Wings short, rounded. Tail lengthened, cuneated. Feet gressorial, as in *Merops*.

*P. Braziliensis*. Il. Pl. E. 370.

*Mexicanus*. Zool. Ill. ii.

*Bahamensis*. Part 5. No.

*Martii*. Spix, i. pl. 50.

154.

*Dombeyii*. Le Vaill. pl. 39.

*ruficapillus*. Illiger.

#### FAMILY CAPRIMULGIDÆ. *Nightjars*.

Plumage lax, soft. Bill exceedingly small: gape enormous. Feet very short, weak: the hallux directed forwards.†

**PODARGUS**, Cuv. Size large. The middle claw not serrated. The hallux not directed forward.

*Podargus* proper. Bill large, very strong: the tip and margins of the upper mandible folding over those of the lower. Culmen elevated and arched. True rictal bristles none. Tongue very thin, entire. Tarsus short. Australia.

*P. humeralis*. Lin. Tr. xv. 198.

*Ægotheles*, Horsf. Vig. Bill weaker, depressed. Tarsus lengthened. Middle and outer toes nearly equal; inner much shorter. Australia.

*Æ. Australis*. Sw. White's Voy. pl. 29.

\* It is by this form, as I suspect, uniting to *Lamprotila*, that the circles of the *Halcyonidæ* and the *Trogonidæ* are connected.

† Until this family, and the next, are better understood, both in regard to the species, and the subordinate forms, I have thought it best not to attempt their natural arrangement.

*Nyctibius*, Humboldt. Bill small, as in *Caprimulgus*: the upper mandible with a projecting tooth. Feet broad, flat.

*N. grandis*. Vieil.

*CAPRIMULGUS*, Lin. Bill remarkably small and weak; the sides inflexed, and sometimes gaping. Tarsus short. All the toes directed forwards; the inner and outer toes equal: the middle claw pectinated.

*Caprimulgus*. Gape strongly bristled. Tail lengthened, rounded. Lateral toes equal.

*C. Europæus*. Selby. i. pl. 42\*.

*Psalurus*, Sw. Gape strongly bristled. Tail excessively long, and very deeply forked. Brazil.

*P. macropterus*. Pl. Col. 157. *bifurcatus*. Sw. Sp. Nov.

*Chordeiles*, Sw. Gape perfectly smooth. Wings very long, equal to the tail, which is slightly forked. North America.

*C. Americanus*. N. Zool. ii. Wilson, 40. f. 1, 2.

*SCORTORNIS*, Sw. General structure of *Caprimulgus*; but the outer lateral toe is shorter than the inner.

*Scortornis*. Rictus strongly bristled. Tail lengthened, graduated, or rounded.

*S. climacterus*. West. Af. ii. Vieil. Gal. 122.

*Macrodipteryx*, Sw. Rictus strongly bristled. Wings long, equal to the tail, and with a lengthened remiform feather in each. Tail even. Africa.

*M. Africanus*. Sw. West. Af. ii. Shaw, N. Miss. pl. 265.

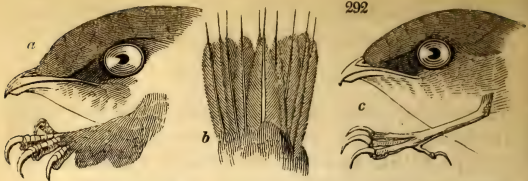
*Proïthera*, Sw. Rictus almost smooth. Wings very long, equal to the tail, which is short and even. Tarsus very naked. America.

*P. diurnis*. Pl. Col. 182.

#### FAMILY HIRUNDINIDÆ. *Swallows*.

Plumage compact, glossy. Bill very small and triangular.

*CYPSELUS*, Aristotle. Margins of the bill inflected and slightly gaping. Gonys ascending. Wings excessively long, curved. Feet small, weak. Tarsus very short.



*Cypselus*. (fig. 292. a) Tarsus thickly feathered. All the four toes directed forwards; the two middle equal. The hallux, or inner toe, shorter than the exterior. Tail forked or even.

*C. apus*. Selby, pl. 42. f. 4.

*Macropteryx*, Sw. (fig. 292. c) Tarsus remarkably short, naked. Anterior toes long; the outer scarcely shorter than the middle; the inner shortest; hinder toe very short. Tail long, forked. India.

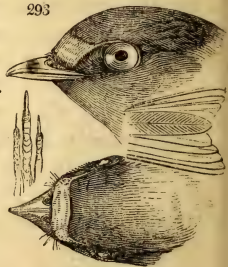
*M. longipennis*. Zool. Ill. ii. pl. 47. *mystaceus*. Less. V. C. pl. 42. *comatus*. Pl. Col. 268.

*Chætura*, Stevens. (fig. 292. b) Feet as in the last, but the tarsus longer than the middle toe. Tail short, even; the shafts prolonged into acute points.

*C. macroptera*. Zool. Ill. ii. pl. 42.

*HIRUNDO*, Linn. Bill flattened its whole length; the margins not inflected. Rictus smooth. Feet insessorial. Lateral toes equal; middle toe longer than the tarsus. (fig. 293.)

*H. rustica*. Selby, pl. 42. f. 1.



## ORDER RASORES. *Rasorial Birds.*

FAMILY PAVONIDÆ. *Peacocks and Pheasants.*

Tail very much developed. Tarsus of the males generally armed with spurs. Hinder toe elevated.

**PAVO**, Linn. Upper tail covers excessively developed : tail capable of being spread like a fan. Head plumed and crested. Tarsus spined.

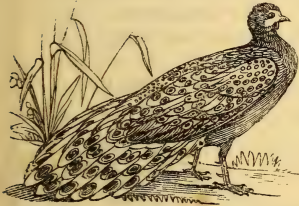
*P. cristatus*. Pl. Enl. 433. *muticus*. Vieil. Gal. 202.

**Argus**, Tem. Tail horizontally compressed ; the two middle feathers excessively long. Wings with the secondary covers much longer than the primaries. Head and neck bare.

*A. giganteus*. Tem. Vieil. Gal. 204.

**Polyplectron**, Tem. (*fig. 294.*) Tail long, flat, rounded. Tarsus long, slender ; armed in the male with several spines. Claws small ; that of the hallux very short.

*P. bicalcaratus*. Pl. Enl. 492.



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**Meleagris**, Linn. Head and neck naked, fleshy, tuberculated ; a fleshy caruncle in front. Tail round, capable of expansion.

*M. gallopavo*. Pl. Enl. 97.

*ocellata*. Pl. Col. 112.

**PHASIANUS**, Linn. Tail narrow, slender, graduated. Bill short, strong.

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**Phasianus**. (*fig. 295.*) Head and neck feathered. Orbits naked, warted.



*P. colchicus*. Auct. The common pheasant.

**Nycthemerus**, Sw. Head furnished with naked wattles.

*N. pictus*. Pl. Enl. 217. *N. argentatus*. Pl. Enl. 123.

**Ceriornis**, Sw. Head partly naked, with fleshy horn-

like caruncles over the eyes. Crown with a pendant crest.\* (*fig. 296. a*)

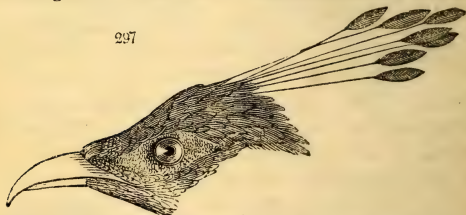
*C. macrolophus.* Less. Dict. des S. N. pl. 59.



**GALLUS, Antiq.** Tail vertically compressed and carried erect; the middle feathers long, and arched. Bill moderate, strong. Crown with a fleshy naked crest. The mouth furnished with wattles. (*fig. 296. b*)

**LOPHOPHORUS, Tem.** Bill rather lengthened: the upper mandible very much curved, and projecting beyond the lower. Head feathered. Crown with a lanceolate crest. Tail even, straight. (*fig. 297.*)

*L. refulgens.* Pl. Col. 507. *leucomelanus.* Pl. Col. pl. 1.



**NUMIDA, Guinea-fowl.** Bill short, strong. Nostrils lateral, placed in the cere. Head naked, surmounted by a callous crest. Tail short, bent downwards. Africa. (*fig. 298.*)

*N. meleagris.* Pl. Enl. 108.  
*mitrata.* Pall. Spi. 3. f. 1.  
*crinata.* Vieil. Gal. 209.  
*maculipennis.* W. Af. ii.  
*ptyloryncha.* Mus. Paris.



\* M. Lesson's expressive name of *Satyrus* seems to have the priority, but it has long been used in Entomology; and that of *Tragopan* is in every way objectionable.

FAMILY TETRAONIDÆ. *Partridges and Grouse.*

Bill and tail very short. Hallux elevated.

**CRYPTONYX**, Tem. Bill short, thick; the mandibles of equal length. Nostrils placed in the middle of the bill, and covered by a long naked membrane. Feet large. The hinder toe elevated, and without a claw. Head conspicuously crested.

*C. coronatus*. Mus. Carl. pl. 64.

**ODONTOPHORUS**, Vieil. Bill naked at the base, convex above, much compressed, and with a double tooth near the point. Orbits and lores naked.\*

Tocro of Buffon.

**ORTYGIS**, Ill. Bill moderate, slender, straight. Nostrils lateral, linear, placed near the middle of the bill. Feet three-toed, slender. Hind toe wanting. Wings and tail very short; the latter nearly concealed.

*O. nivosus*. Zool. Ill. i. pl. 163.

**TETRAO. Grouse**. Bill short, very thick. Tarsus feathered. Four-toed. Eyebrows naked. Tail moderate, of twelve feathers. Wings short.

*Tetrao*, Linn. The tarsus feathered, but the toes naked. Sides of the neck, in the male, often with elongated feathers. Tail even. Eyebrows plumed.

*T. Scoticus*. Selby, pl. 59. f. 1. *urogallus*. P. Enl. 73.

*Lagopus*, Willughby. Bill with the base thickly feathered. Eyebrows naked and smooth. Tarsus and toes thickly covered with feathers.

*L. mutus*. Selby, pl. 59. f. 2.

*Lyrurus*, Sw. Toes naked. Tail lyre-shaped.

*L. tetrix*. Selby, pl. 58.

*Pterocles*, Tem. *Sand Grouse*. Toes naked. Bill slender; the base thickly covered with feathers. The hind toe very short, or entirely wanting. Wings long, pointed. Tail graduated or cuneated.

*P. arenarius*. Pl. Col. 52. *paradoxus*. Pl. Col. 95.†

\* I have not been able to examine accurately these first two genera.

† I consider this bird as the real type of the whole group.

*Centrocircus*, Sw. Tail feathers lanceolate, ending in naked points.

C. urophasianus. N. Z. ii. pl. 58. phasianellus. Edw. 117.

**PERDIX**, Briss. Nostrils and tarsi naked. Bill with the general structure of *Tetrao*; short, strong, and very convex; the tip broad. Wings generally rounded. Tail very short.

*Perdix*. Partridge. Frontal feathers advancing in front between the nostrils. Tarsus smooth; posterior tarsal scales large, transverse, strong, in two rows, and nearly equal to the anterior scales. Inner toe much shorter than the outer; hinder toe very small. Claws very broad, and nearly straight. Tail even, or very slightly rounded. Universal.

P. cinerea. Selby, pl. 61.

*Chætopus*, Sw. *Francolin*. Frontal feathers divided in front by the base of the bill. Tarsus generally armed with spurs in the male: posterior tarsal scales, small, hexagonal, much smaller than those in front. Inner toe equal, or nearly so, to the outer. Claws compressed. Tail very short, often nearly hidden by the covers. Chiefly Tropical Asia and Africa.

C. Adansonii. West. Af. ii. Vaillantii. Pl. Col. 477.  
Pondicerianus. Pl. C. 213.

*Coturnix*, Briss. *Quails*. Stature small. Wings with the first quill as long as the others. Tail very short, fasciculated, concealed by the covers. Universal.

C. Europæus. Selby, pl. 62.

*Ptilopachus*, Sw. Bill small, slender. Nostrils naked, very large, occupying one half the length of the bill. Wings rounded. Tail broad, rounded, larger and longer than in *Perdix*; the feathers very soft. Feathers of the back and rump with the shafts thickened, and apparently spinous, as in *Ceblepyris*. Tarsus shorter than the middle toe. Lateral toes nearly equal. Africa and India.

P. erythrorynchus. West. Af. ii.



*Ortyx*, Stevens. Bill short, very high ; the culmen considerably elevated and curved : the tip hooked : the gonys thick and ascending. Nostrils large, naked. Tarsus smooth. Lateral toes unequal ; hinder toe none. Tail moderate. America only.

*O. borealis*. Wil. 47. f. 2.      *malurus*. Spix, ii. pl. 76. a.

**CRYPTURUS**, Ill. *Tinnamou*. Bill slender, weak, lengthened, as long as the head. The base of the culmen broad and flattened. Nostrils very long ; the aperture naked. Gonys excessively short. Feet smooth. Inner toe shortest. Tropical America.

*Crypturus*. Bill slightly depressed. The aperture of the nostrils large, oval, and placed in the middle of the bill. Tail feathers firm, but concealed and confounded with the upper covers. Hind toe minute, not longer than its claw.

*C. lepidotus*. Zool. Ill. i. pl. 19.      *serratus*. Spix, pl. 76.

*Nothurus*, Wagler. Bill very wide at the base. Frontal feathers advancing to the aperture of the nostrils. Tail feathers none ; the upper covers soft and loose. Hinder toe longer than its claw.

*N. rufescens*. Spix, pl. 76. a.      *minor*. Sp. pl. 82. P. C. 316.  
Pl. Col. 412.      *maculosus*. Spix, pl. 80.

#### FAMILY STRUTHIONIDÆ. *Ostrich*.

Stature very large. Wings short. Often incapable of flight.

**OTIS**, Linn. *Bustards*. Bill short, straight ; the base depressed ; the sides compressed and conic. Feet long, naked above the knee. Toes three, directed forwards, short, with a connecting membrane. Wings moderate ; the third quill longest.

*O. tarda*. Pl. Enl. 245.

**STRUTHIO**. *Ostriches*. Wings abortive. Bill much depressed.

*Struthio*, Antiq. *True Ostrich*. Wings short. Head naked. Feet with only two unequal toes, placed in front.

*S. camelus*. Pl. Enl. 457.

*Casuarius*, Ray. *Cassowary*. Bill strong, emarginate. Head and neck naked; the former with an elevated protuberance, the latter with wattles. Feet three-toed, all placed forwards.

C. galeatus. Pl. Enl. 313.

*Dromiceus*, Vieil. *Emu*. Head smooth, feathered. Bill short, depressed, resembling that of *Platyrynchus*. Under mandible serrated. Nostrils naked, linear, placed in the middle of the bill. Throat naked. Feet with three toes, placed forward. Tarsus strongly serrated behind. The rasorial type. Frugivorous and herbivorous.

D. Australis. White's Voy. pl. 1.

*Apterynx*, Shaw. *Kiwi*. Bill slender and considerably lengthened. Feet short, with three toes before, and a spur, representing the hallux, behind. The tenuirostral type.\*

A. Australis. Zool. Trans. i. pl. 10.

*Rhea*, Brisson. Bill straight, depressed; the tip bent down and hooked. Head feathered. Feet with three toes before, and a callous protuberance behind. Wings developed, but too short for flight. Insectivorous. The fissirostral type.

R. Americana. Auct.

#### FAMILY COLUMBIDÆ. *Pigeons*. †

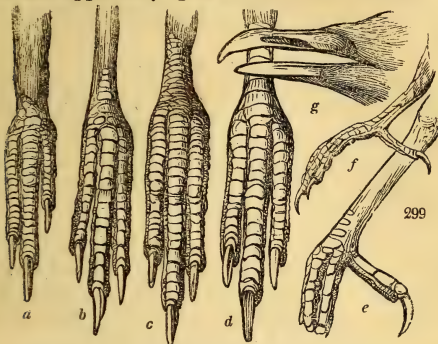
Feet very short. Wings long.

\* There is scarcely any bird out of the gallatorial order, which so beautifully represents it as this. Mr. Yarrell is even struck by the resemblance of the bill to "that of an ibis." Although, perhaps, the resemblance of this part, from its thickened termination, is much more similar to *Scolopax*.

† So far as I have yet proceeded in the analysis of this group, I have formed the following opinions:—1. That the true pigeons constitute only one of the five primary divisions; just as the true woodpeckers (*Piciana*) form only one group in the circle of *Piciada*, so that both are of equal rank and value. 2. It consequently follows that the four other divisions of the *Columbida* are either represented by birds which have not been yet discovered, or by types very peculiar in their general appearance. 3. Of this latter I consider that *Opisthocomus* connects the *Columbida* with the *Megalopida*, by means of *Dicrolophus*, and that *Chionis* is the gallatorial representative. Of the two remaining types, one of which is the fissirostral, I am quite ignorant: I think it more than probable, however, that the true pigeons form one circle, and not two.

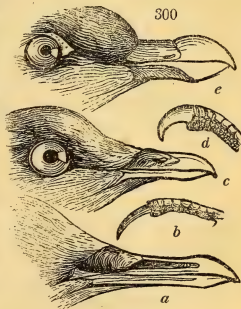
SUBFAM. COLUMBINÆ. *True Pigeons.*

Bill lengthened, slender; the base soft and tumid. Wings long. Feet very short. Rump feathers thick, rigid, and apparently spinous, as in the *Ceblepyrinæ*.



**PTILONOPUS.** (*fig. 299. a. 300. c, d*) Tarsus short, feathered. Toes cleft to the base; the inner shortest. Bill short: the extremities of the two mandibles of equal thickness. The gonyes very short, strong, and forming an ascending angle. Tropics of Asia and Australia.

*Ptilonopus*, Sw. Bill slender. Wings moderate; the first quill shorter than the second, and generally narrowed; primaries not much longer than the tertials. Tail moderate, rounded.



*purpuratus*. Nat. Lib. v. pl. 3.  
*monachus*. Pl. Col. 253.  
*leucogaster*. Nat. Lib. v. pl. 5.  
*magnificus*. Pl. Col. 163.

*hypogaster*. Pl. Col. 252.  
*flavigaster*. Ib. 254.  
*erythrocephalus*. Ib. 106.

*Vinago*, Cuv. (*fig. 300. e*) Bill very strong. Wings pointed; the three first quills nearly equal, and much longer than the others; tertials short.

V. calva. Tem. Fig. i. 63. olax. Pl. Col. 241.  
aromatica. Pl. Enl. 163.

*Sphenurus*, Sw. Habit of *Vinago*; but the tail long and graduated; the two middle feathers greatly narrowed, and projecting considerably beyond the rest. Fissirostral type.

S. semitorquatus. Pl. Enl. 240.

*Lophorynchus*, Sw. Bill strong; the base of the under mandible considerably thickened. Nostrils surmounted by a compressed and recurved crest advancing on the basal half of the culmen. Wings very long; the two first quills slightly graduated. Tail long, even. Australia. Rasorial type.\*

L. dilophus. Shaw's Zool. N. H. pl. 5.

**COLUMBA**, Linn. Bill slender. Feet formed both for perching and walking. The tarsus not longer than the hallux; the lateral toes equal. (*fig. 299. d*)

*Columba*. Wings rather lengthened and pointed; the three first quills nearly equal, and longest. Tail rather short, even, or slightly rounded. Hinder toe longer than the tarsus.

C. palumbus. Selby, pl. 56. f. 1.

*Geopelia*, Sw. Size small. Wings short, rounded; the three first quills graduated, the first generally narrowed towards the tip. Tail lengthened, graduated, obtuse. Hinder toe shorter than the tarsus. India. The tenuirostral type.

G. lineata. Mus. Carl. pl. 67.

*Ectopistes*, Sw. Wings very long, pointed; the two first quills the longest. Tail cuneated; the four middle feathers lanceolate. Hinder toe and tarsus equal; the latter half-plumed. The fissirostral type. (*fig. 299. c, g*)

E. migratoria. Wilson, pl. 44. f. 1.

*Macropygia*, Sw. Wings moderate, rounded; the first and second quills graduated, and much shorter than

\* The *Columba oceanica* and *ænea*, which I have not examined, may possibly represent the remaining, or tenuirostral type; in which case they can bear Mr. Selby's excellent name of *Carpophaga*. Vide Nat. Lib. v. p. 117.

the third. Tail long, graduated; the feathers very broad and obtuse. The rump feathers very thick set. Bill short: the gonys angulated. Tarsus plumed. Hinder toe longer than the tarsus.

*M. phasianella*. Pl. Col. 100. *infuscata*. Lich. (Brazil.)

*Reinwardii*. Ib. 248.

**TURTUR**, Selby. *Turtles*. Bill slender. Tarsus naked: the tarsus and hallux of equal length. The outer toe shorter than the inner.

*Turtur*. Wings rather lengthened; the two first quills slightly graduated. Tail moderate, even, or rounded.

*T. migratorius*. Selby, 56. f. 2. *risorius*. Pl. Enl. 244.

**Æna**, Selby, MSS. (*fig. 299. f*) Wings lengthened; the first three quills nearly equal, and longer than the others. Tail long, cuneated; the two middle feathers narrowed. Feet very small. Represents *Ectopistes*. Africa.

*O. Capensis*. Selby. Ois. d' Af. 273.

**Chæmepelia**, Sw. Wings short, rounded; the four first quills nearly equal, and not much longer than the tertials; the feathers very broad. Tail moderate, rounded. A line of feathers on the tarsus. America.

*C. cinnamomina*. Spix, ii. 75. a. f. 1.

**Leptotila**, Sw. (*fig. 299. b, c. 300. b*) First quill suddenly narrowed; the fourth longest. Tarsus lengthened, and much longer than the hallux. All the toes long and slender. Knees naked. America only?

*P. rufaxilla*. Nat. Lib. v. pl. 24.

**PERISTERA**, Sw. (*fig. 299. b, e. 300. a*) Bill lengthened, slender. Wings pointed; the second quill longest. Tail moderate. Tarsi rather short. Lateral toes equal; hinder toe very short, not more than half the length of the middle toe. Australia only.\*

*P. calcoptera*. Nat. Lib. v. pl. 21. *scripta*. Pl. Col. 187.

**PTILOPHYRUS**, Sw. *Crownbird*.† Size large. Wings

\* As the bronze-winged pigeons of New Holland appear to me the true typical examples of this genus, I have retained to them, as is usual in such cases, the subgeneric name; but not having finished the analysis of this family, I do not venture to characterise the other subgenera: the same observation is applicable to the next genus.

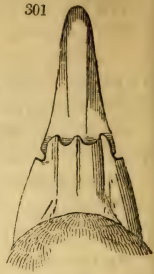
† See Vol. I. p. 233.

short. Tail long, rounded. Tarsus much lengthened. Head with an elevated compressed crest.

*P. coronatus*. Ois. d' Af. pl. 280.

**CHIONIS**, Forster.\* Bill short, strong, compressed, entire. Nostrils tubular, protected by hard, elevated, and complicated folds, which envelope the base. Front of the head, and part of the face, naked. Wings very long. Feet very short, strong. Tarsal scales small, rough. Outer and inner toe slightly connected; the inner shortest, and cleft at the base: hinder toe short, not elevated, and placed on one side, as in the genus *Colius*: middle toe lengthened. Claws moderate; much worn by walking.

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*C. vaginalis*. Pl. Col. 509.

#### FAMILY MEGAPODINÆ.† *Greatfoots*.

Size large. Feet remarkably developed, very large. The hinder toe lengthened, and on the same plane with the others.

**MENURA**, Shaw. Bill moderate, depressed at the base, straight; the tip obsolete notched. Nostrils naked, and placed near the middle of the bill. Feet very large, strong, and robust. Nearly all the anterior toes equal. The claws enormous for the size of the bird, obtuse, and slightly curved. Wings short. Tail very long, lyre-shaped; the feathers singularly

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\* As some explanation of the station I have now assigned to this remarkable type, it must be remembered, that as the *Columbidæ* are the most aberrant of the rasorial order, so is *Chionis* the most aberrant of the *Columbidæ*. The experienced ornithologist will discover many beautiful analogies resulting from this arrangement. The above generic characters have been drawn up from a careful examination of a specimen in the British Museum.

† As I have every reason to believe, from an attentive study of this family, that *Crax* is an aberrant genus, I have thought it better at once to correct my former error, and to name the whole from that group which is one of the chief types.

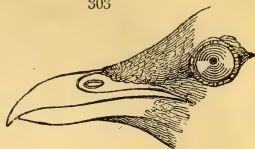
developed. The typical or conirostral form of the whole family. Australia.

*M. paradisea*. Vieil. Ois. dor. ii. pl. 15, 16.

*Megapodius*, Gaimard. Bill

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small, very short, compressed. Culmen arched, and curved from the base: the base not wider than high. Nostrils as in *Menura*. Feet strong,



enormously large, resembling those of the last. Wings moderate. Tail very short.

*M. Freycinetii*. Pl. Col. 220.

**PALAMEDIA**, Linn. Bill short, compressed; the base high, and the point considerably curved. Feet large, thick, naked just above the knee. The claws very long. The lateral toes equal; the middle lengthened. Claws moderate; the hinder one longer, and nearly straight. Wings moderate, very broad. The carpus armed with bony spines. Tail short. America. Subtypical.

*P. cornuta*. Pl. Enl. 451. *crinata*. Pl. Col. 219.

**DICHOLOPHUS**, Illiger. Bill longer than the head, thick, and strong; the base depressed; the tip compressed, and curved downwards. Nostrils very large, membranaceous; the aperture in the middle of the bill. Feet long, slender. The three anterior toes very short and thick. The hinder much raised, and not touching the ground. Claws short, strong. Wings moderate, much rounded. (*Temminck*.) The rasorial type. South America.

*D. cristatus*. Pl. Col. 237.

**PSOPHIA**, Linn. Bill short, compressed: the culmen curved from the base, and of the true rasorial structure. Nostrils large, naked, basal; the aperture oval. Feet long, slender. The outer and inner toe very slightly connected; the inner cleft. Wings short, concave. Tail very short. The grallatorial type. S. America.

*P. crepitans*. Pl. Enl. 169.

**CRAX**, Linn. Bill various. Wings short. Tail lengthened. Feet rather large. The hind toe long, and placed on the same plane with the others. Claws curved.

*Crax*, Linn. (fig. 304.) Bill moderate, compressed: the culmen curved from its origin; the base covered with a cere, in which are the naked nostrils, having their aperture long, curved, and linear. Head crested.

*C. globifera*. Pl. Enl. 86.

**OURAX**, Cuvier. Front plumed. Bill very short, as high as it is long, greatly compressed, without a cere. The nostrils transverse, nearly hid by the frontal feathers. (fig. 305.)

*O. erythrorynchus*. Pl. Col. 153.

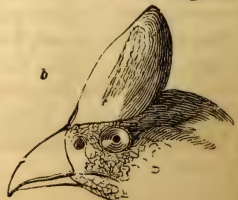
**ORTALIDA**, Merrem. Bill short, high; the culmen much arched. Cheeks naked, warty. The throat with a naked stripe on each side.

*O. garrulus*. Pl. Enl. 146.

**PENELOPE**, Linn. Bill small, slender, much longer than high; the base straight, but the culmen curved beyond. Nostrils very large, naked, half the length of



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the bill. Face and sides of the chin naked. Lateral toes equal. (*fig. 306. a*)

*P. cristata*. Edwards, pl. 13.

*Lophocerus*, Sw.\* Front of the head with an elevated, pear-shaped, horn-like protuberance. Bill intermediate in shape between *Crax* and *Ourax*. Cere small. Nostrils basal, oval or round. (*fig. 306. b*)

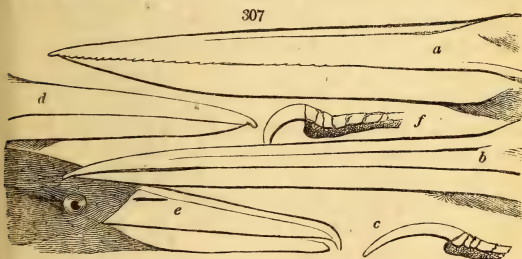
*C. galeata*. Lath. Pl. Enl. 78.

## ORDER GRALLATORES. *Waders.*

### FAMILY ARDEADÆ. *Herons and Cranes.*

Size large. Bill long, conic, very hard, straight, and compressed. Hind toe moderate, and placed on the same level as the others.

ARDEA, Linn. Bill long, very straight throughout, conic, compressed from the base. Middle claw serrated.



*Ardea*, Linn. *Herons.* (*fig. 307. a*) Bill very strong, perfectly straight; the tip not bent downwards; the margins serrated: the gonys strong, and ascending. Scapular feathers long and linear. Legs long. Thighs naked a considerable distance from the knee.

\* By this form I consider the circle of the *Rasores* is closed; the genus *Crax* thus blending into that of *Numida* in the family of *Pavonidæ*.

A. cinerea. Selby, ii. pl. 2. palliata. Spix, pl. 90.  
Herodias. Wil. 65. f. 2. pacifica. Ill. Orn. pl. 90.

*Egretta*, Brisson. *Egrets*.\* (fig. 307. b) Bill more slender: the culmen inclining towards the tip, and bent downwards: the commissure slightly gaping towards the end; the margins serrated: the gonyes short, slender, and not ascending. Scapular feathers (typically) very long, and divided into detached filaments, Legs long. Inner toe shorter than the outer.

E. Americana. Wil. 61. f. 4. cærulea. Wil. 62. f. 3.  
alba. Nauman, 46. f. 91. nigerrima. Wagler, 22. ?  
flavirostris. Wagler, 9. Ludoviciana. Wilson, 64. f. 1.  
Garzetta. Auctorum. \* Aberrant, leading to *Butor*.  
candidissima. Wil. 62. f. 4. scapularis. Pl. Enl. 908. Part  
russata. Pl. Enl. 910. 5. No. 155.  
comata. Selby, ii. pl. 6. virescens. Part 5. No. 156.  
Agami. Pl. Enl. 859. Javanica. Ib. No. 158.  
gularis. West. Af. ii. thalassina. Ib. No. 157.  
unicolor. Ib. ii. plumbea. Ib. No. 159.

*Butor*, Antiq. *Bitterns*. Bill as in *Ardea*. Face naked. Legs almost or quite feathered to the knees. Inner toe considerably longer than the outer. Claws long, slender, very slightly curved (fig. 307. c). Anterior scales transverse. The grallatorial type.

B. stellaris Selby, ii. pl. 8. exilis. Wilson, 65. f. 4.  
Americana. Wil. pl. 65. f. 3. minutus. Selby, ii. pl. 6. f. 1, 2.

*Tigrisoma*, Sw. *Tiger Bitterns*. Bill as in *Ardea*. Face, and sometimes the chin, naked. Legs almost feathered to the knees. Inner toe rather shorter than the outer. Claws short, stout, regularly curved (fig. 307. f). Anterior scales reticulate or hexagonal. The rasorial type.

T. lineata. Pl. Col. 860.

*Nyctiardea*, Sw.† *Night Herons*. Bill rather short, broad, stout. Culmen curved from the base; the tip bent, and deeply notched; cutting margins curved,

\* I have considerably extended the limits of this subgenus, which the prince of Musignano restricts to the white egrets only.

† *Nycticorax*, implying a resemblance altogether false, I have ventured to propose the true meaning of the vernacular name by which these birds are so well known.

sharp, entire. Gonys long, and nearly straight. Feet as in *Tigrisoma*. Anterior scales partly hexagonal, and partly transverse. Inner toe shorter than the outer. The fissirostral type.

N. Europæa. Selby, ii. pl. 7. violacea. Wil. pl. 65. f. 1.  
 leuconotus. Wagler, sp. ? pileata. Pl. Enl. 907.  
 33. (fig. 307. d)

CANCROMA. Linn. Habit of *Ardea*. Bill short, excessively broad, and boat-shaped. The upper mandible folding over the cutting edges of the lower.

C. cochlearia. Pl. Enl. 38.

PLATALEA, Linn. Bill long, depressed, very flat, and spoon-shaped, the tip being considerably dilated.

P. leucorodia. Selby, ii. pl. 10.

CICONIA, Brisson. Bill much lengthened, perfectly straight, and somewhat conic: the culmen more or less depressed in the middle. Nostrils placed in a groove which extends to half the length of the bill. Head more or less naked. Feet four-toed. The middle claw not serrated, or the hind toe elevated. —  
 N. B. The subgeneric types require investigation.

C. alba. Pl. Enl. 366.

*Mycteria*, Linn. Size gigantic. Bill strong, long, conic: the culmen perfectly straight: the gonys recurved.

M. Americana. Pl. Enl. 817. Australis. Lath. Syn. pl. 138.

HÆMATOPUS, Linn. Bill long, very straight, contracted in the middle as in some of the *Ciconiæ*; the tip wedge-shaped. Feet three-toed. The gatorial type.

H. ostralegus. Selby, ii. pl. 33. f. 1, 2.

SCOPUS, Brisson. *Umber*. (fig. 307. e) Bill straight, broad, much compressed: the tip of the upper mandible abruptly hooked, and of the lower truncated. Culmen and gonys carinated. Nostrils linear, closed. Wings long. Tail short. Legs moderate. All the toes united by a membrane; the inner shortest.

S. umbretta. Pl. Enl. 796.

FAMILY TANTALIDÆ. *Ibis.*

Size large. Bill hard, considerably lengthened, cylindrical, and curved from the base. Face or head more or less naked. Hinder toe on the same plane as the others. Plumage metallic. The tenuirostral family.

ANASTOMUS, Illiger. (*fig. 308.*) *Openbeak.* Bill straight, hard, heavy, solid, compressed, marked with longitudinal wrinkles.

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Upper mandible very straight; the base thickened at the top,



and as high as the crown; the tip notched; the margin dentated: under mandible greatly curved upwards, and only touching the upper at the base, and at the tip.

*A. lamelligerus.* Pl. Col. 236.

TANTALUS, Linn. Bill nearly as thick, at the base, as the head; cylindrical and attenuated towards the tips, which are slender and slightly bent: margins entire. Upper mandible notched. Nostrils naked, vertical, basal, oval-oblong. Toes connected at the base.

*T. loculator.* Wilson, pl. 66. f. 1.

IBIS, Antiq. Bill much more slender; cylindrical, and arched from the base. Nostrils basal, lateral. Wings broad, ample: the second and third quills longest.

*I. ruber.* Pl. Enl. 80, 81.

ARAMUS, Vieil.\* Bill lengthened, slightly curved towards the point, which is entire and inflexed. Under mandible curved from about the middle, and angulated. Furrow of the nostrils long. Nostrils lateral, remote from the base, longitudinal. Feet long. Hallux elevated. Anterior toes divided at their base. Wings moderate; the two first quills shorter than the third, which is the longest. America.

*A. scolopacius.* Pl. Enl. 848.

\* This type I have not examined: the above characters are those of *M. Temminck*. It seems related, either by analogy or affinity, to the rails.

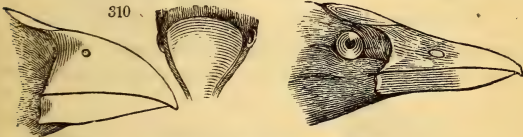
FAMILY RALLIDÆ. *Rails.*

Feet very large. Bill in general short, and greatly compressed. Tail excessively short, nearly hidden by the covers. Hinder toe elevated.

PARRA, Linn. *Jamana, or Spur-wing.* (fig. 309.) Bill straight, slender, moderate. Feet very long. Toes and claws of enormous length; the latter straight or recurved. Carpus generally armed with acute spurs. Typical.

P. *Africana.* Zool. Ill. ii. pl. 6.

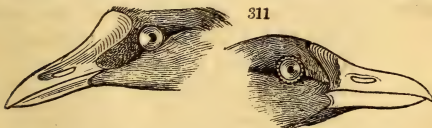
PORPHYRIO, Briss. *Sultana.* Bill short, strong, high; the base dilated into a flat plate on the front of the



head; the culmen arched. Nostrils large, basal, covered by a membrane, naked; the aperture terminal, and oval. Feet very large. Toes without any lateral membrane. Claws large, slightly curved. Subtypical. (fig. 310.)

P. *smaragnotus.* Tem. Man. *Americanus.\** Wil. 75. f. 2. ii. p. 700. *albus.* White's Voy. pl. 27.

FULICA, Linn. *Coot.* (fig. 311.) Bill as in *Porphyrio*, but more slender: the base straight: the gonyes short and angulated. Feet very large. The toes margined with



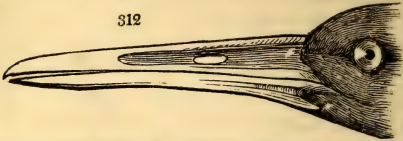
\* The *Gallinula Martinica* of Latham, but a true *Porphyrio*.

a lateral membrane, which is either narrow, and of equal breadth, or dilated into lobes. The natatorial type.

\* *F. Chloropus*. Selby, ii. pl. 31. *atra*. Selby, ii. pl. 32.

**RALLUS**, Linn. *Rail*. Bill lengthened, slender. Both mandibles, in general, slightly curved, and with

312



their margins considerably inflected beyond the nostrils. The tenuirostral type. (*fig. 312.*)

*R. cæsius*. Part 5. No. 162. *neglectus*. Part 5. No. 164.  
*sanguinolentus*. Ib. No. 161. *brachypus*. Ib. No. 165.  
*superciliosus*. Ib. No. 163. *albiventer*. Ib. No. 167.

**GALLINULA**, Auct. *Water-Hen*. Bill short, straight; the margins not inflexed. The cutting edges of

313



the upper mandible folding over the lower. Gonyes very short, angulated. Toes simple, without any marginal membrane. The rasorial type. (*fig. 313.*)

*immaculata*. Part 5. No. 168. *ecaudata*. Part 5. No. 200.  
*curvirostra*. Ib. No. 169. *modesta*. Ib. No. 201.  
*flavirostra*. Ib. No. 170. *leucosoma*. Ib. No. 202.  
*albifrons*. Ib. No. 171.

**Alethelia**, Lesson. Tail feathers obsolete, or confounded with those of the rump, some of which are laterally compressed, and all are long, lax, and very soft.†

*A. lineata*. Part 5. No. 172.

\* I consider this as only an aberrant species, with the lobes not so much developed, just as we see among the *Phalaropes*: it may be placed, indeed, with *Porphyrio*, but has no connection whatever with *Gallinula*.

† This extraordinary form is, in all probability, the true type of *Gallinula*.

FAMILY SCOLOPACIDÆ. *Sandpipers and Snipes.*

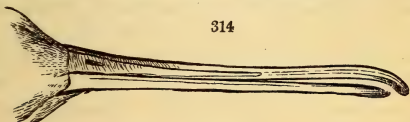
Wings long, much pointed. Tail very short. Bill very long, slender, soft, cylindrical: the culmen straight its whole length. Hinder toe generally present, elevated above the others.

EURYPYGIA, Illiger. Bill resembling *Gallinula*, but larger: the nasal groove very deep, and long. Wings long, rounded. Tail large, broad.

E. Helias. Pl. Enl. 782.

SCOLOPAX, Linn. Bill straight, very slender, narrow, soft, but depressed and dilated close to the tip: the margins not inflexed: the nasal groove reaching to the tip.

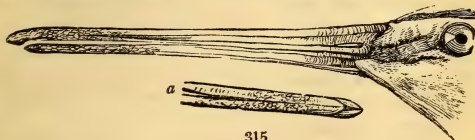
*Rynchæa*, Cuv. Bill much lengthened: the upper



mandible thickened and curved at the tip. Tarsus not longer than the middle toe. Rasorial. (*fig. 314.*)

R. Capensis. Pl. Enl. 270.

*Scolopax*, Linn. Bill very much lengthened, straight, and the tips rough, with excavated spots: the tip of



upper mandible thickened and projecting beyond that of the lower, which it receives in a groove. (*fig. 315.a*) Middle toe much longer than the tarsus. (*fig. 315.*)

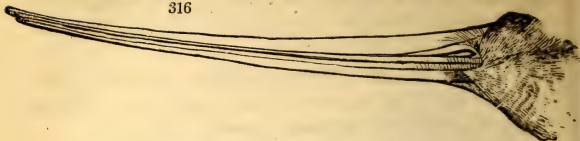
S. major. Selby, pl. 23. f. 2. rusticola. Selby, 23. f. 1.

griseus. Ib. pl. 24. f. 2.

*Limosa*, Brisson. Bill very long, either straight, or

inclining a little upwards; flattened towards the tip, which is mere or less dilated, always smooth, and that of the upper mandible never thickened beneath.

316



Tarsus longer than the middle toe. Anterior toes semipalmate, flattened, with a marginal membrane on each side; hinder very small. (*fig. 316. 317. a*)

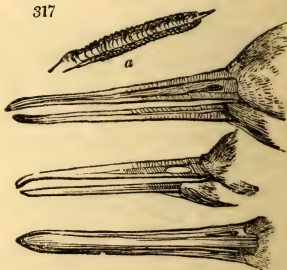
*L. melanura.* Selby, ii. pl. 21. *fedoa.* Wilson, pl. 56. f. 4.

*Phalaropus*, Brisson. Bill remarkably slender and flexible; the nasal groove extending only half way. Tarsus short, not longer than the hind toe. Anterior toes semipalmated, and margined either by a narrow and simple, or a lobed and more dilated, membrane. The natatorial type.

*Hyperborea.* Selby, pl. 28. f. 1, 2. *Wilsoni.* N. Z. ii. pl. 69.

*Tringa*, Linn. Bill moderate, generally straight, soft and flexible; the tip dilated and smooth. Tarsus longer than the middle toe. Anterior toes generally cleft to their base, flattened, and with a marginal membrane; hinder toe very small, sometimes wanting. The grallatorial type. (*fig. 317.*)

317



*C. arenaria.* Bon. Syn. 320. *canutus.* Selby, ii. pl. 27. f. 1. 3.

**HIMANTOPUS**, Brisson. Bill straight, very slender, narrow; hard, the outer half not depressed, but rounded, the margins being inflexed. Nasal groove extending only to half the length of the bill.



*Recurvirostra*, Linn. Bill flattened; flexible, the tip narrow, very thin, and curving upwards. Legs very long. Anterior toes conspicuously semipalmated. The natatorial type.

*R. avosetta*. Selby, ii. pl. 20.

*Himantopus*, Brisson. Bill very narrow and slender; the base depressed, but the outer half cylindrical and slightly inclining upwards. Tarsus excessively long. Anterior toes semipalmated; the inner shortest; the hinder toe wanting.

*H. melanopterus*. Pl. Enl. 878.

*Totanus*, (fig. 318.) Bechstein. Bill



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rather strong,

either straight or inclining upwards; the sides, at the base, much compressed, but cylindrical beyond. Anterior toes slightly semipalmate; the lateral toes equal; hinder toe slender, rather longer than usual.

*T. fuscus*. Selby, pl. 15. f. 1, 2. semipalmatus. N. Z. pl. 67.

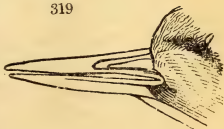
*Machetes*, Cuvier. Bill straight. Feathers of the neck, in the males, much developed. Anterior toes considerably semipalmated. The rasorial type?

*M. pugnax*. Selby, pl. 25.

*Falcinellus*, Cuvier.\* Bill more or less arched. The hinder toe wanting. (*Tem. Man.*)

STREPSILAS, Illiger. Turnstone. Bill short, very

319



straight, conic, compressed its whole length: the gonys bent upwards: the nasal groove hardly extending be-

yond the aperture of the nostrils. Tarsus not longer than the middle toe. Anterior toes cleft to their base, and margined; hinder toe moderate. The natatorial type.

*S. interpres*. Selby, pl. 33. f. 1, 2, 3. (fig. 319.)

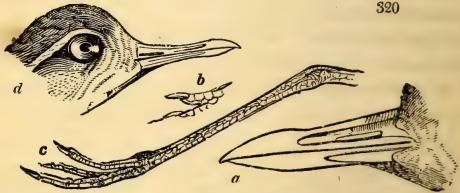
\* Of this type, if such it be, I know nothing, except from the descriptions of Cuvier and Temminck.

NUMENIUS, Brisson.\* Bill long, considerably arched, strong, hard: the upper mandible broader than high. Nasal groove extending the whole length. Nostrils lateral. Tarsus lengthened. The anterior toes margined and semipalmated; the hinder one raised.

*N. arquata*. Selby, pl. 13. *Phæopus*. Ib. pl. 14.

FAMILY CHARADRIADÆ. *Plovers*.

Bill short; the basal half soft, the remaining portion hard: the culmen suddenly elevated and curved. Nasal groove deep, extending to half the length of the bill. Feet long. The three anterior toes cylindrical; the hinder generally wanting.



320

SQUATAROLA, Cuvier. Bill typical. Feet as in the *Scolopacidæ*. The anterior toes margined, flattened, and semipalmated; the hinder toe very minute. The natatorial type? (*fig. 320. a, b*)

*S. melanogaster*. Pl. Enl. 853, 854. 923.

CHARADRIUS, Linn. (*fig. 320. d*) Size small. Wings very long, and pointed; the first quill longest. Hinder toe always wanting.

*C. morinellus*. Selby, ii. pl. 39. f. 1, 2.

VANELLUS, Brisson. *Lapwing*. (*fig. 321. a*) Size large. Wings long, ample; the four first quills nearly equal. Spines on the carpus, and naked lobes on

\* It is obvious that this is the representative only of *Tantalus*; but whether it is one of the primary divisions, or merely a subgenus (in conjunction, perhaps, with *Falcinellus*), in the circle of *Himantopus*, must remain undetermined, until we know more of the form of *Oreopholus*, and of the affinities of *Tachydromus*, &c.



321

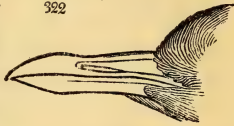


the head, are on many of the species. Tarsus sometimes with a small hinder toe. (*fig. 320. b*)

*V. cristatus*. Selby, ii. pl. 34.

**ŒDICNEMUS**, *Thick-knee*. Culmen scarcely depressed in the middle, hard and strong, its entire length. Nostrils large, membranaceous, not placed in a groove;

322



the aperture large, oval, terminal. Tail longer than the wings, rounded or graduated. Feet three-toed. The rasorial type. (*fig. 322.*)

*O. crepitans*. Pl. Enl. 919. *Americanus*. Part 5. No. 203.

**TACHYDROMUS**\*, Illiger. *Courier*. Bill short, slender. Nostrils short, membranaceous, not placed in a groove, naked; the aperture oval and lateral. Culmen straight as far as the nostrils, but curved beyond. Wings pointed. Feet three or four toed. The toes not flattened or margined.

**GLAREOLA**, Linn. *Pratincole*. Bill much compressed: culmen elevated and convex: gonys straight. Feet four-toed. Middle toe and claw very long; the latter greatly developed, slightly curved, dilated, and obsoletely serrated; inner toe shortest; hinder toe elevated, but touching the ground. Connected to *Tachydromus* by *Tach. chalconotus*, Pl. Col. 298.

*G. torquata*. Selby, ii. pl. 63.

*Tachydromus*, Illiger. *Courier*. (*fig. 323.*) Bill broader than high at its base: both mandibles often curved: the

\* There seems to me little doubt that these three subgenera, however widely apart they have hitherto been placed, are closely united; but the natural affinities of the group, whether with the bustards or the plovers, is by no means determined. Is it not a fissirostral type?

culmen slightly indented at the termination of the nostrils : gonyms nearly straight. Feet long, three-toed. The lateral toes very



short; the outer connected by a membrane to the base of the middle toe; the latter very long, and the claw serrated.

*T. isabellinus*. Pl. Enl. 795. *Burchellii*. Part 5. No. 174.  
*Orientalis*. Part 5. No. 173.

*Ammoptila*, Sw. Bill lengthened, conic: both mandibles of equal thickness: gonyms ascending; the cutting margins considerably inflected. Feet moderate, three-toed. Lateral toes and claws equal; middle toe rather short, the claw entire.

*A. charadroides*. Pl. Enl. 918. (*fig. 321. b*)

## ORDER NATATORES. *The Swimmers.*

### FAMILY ANATIDÆ. *Ducks.*

Bill very broad; the sides furnished with lamellar plates.

#### SUBFAM. PHENICOPTINÆ.

Legs very long. Grallatorial.

PHENICOPTERUS, Linn. *Flamingo*. Size large. Bill thick, cylindrical, short, abruptly bent from the middle: the under mandible considerably thicker than the upper, which is greatly depressed; the margins lamellar.

*P. Europæus*. Pl. Enl. 63. *Americanus*. Wilson, 66. f. 4.

#### SUBFAM. ANSERINÆ. *Geese and Swans. †*

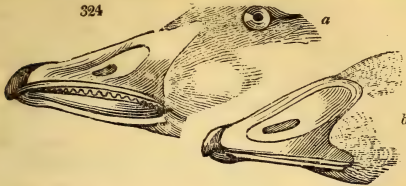
Feet lengthened, moderate. Rasorial.

CYGNUS, Antiq. *Swans*. Size large. Base of the bill tumid, fleshy, and naked. Neck remarkably long. Feet short. Hinder toe simple.

*S. Bewickii*. Selby, pl. 47\*.

† The subgenera of this group have not yet been determined.

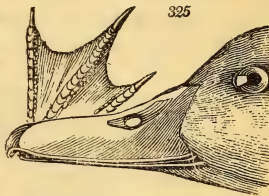
ANSER, Antiq. Geese. (fig. 324.) Size moderate. Base of the bill feathered, and considerably elevated in



front. Nostrils large; the aperture central. Legs lengthened, placed in the equilibrium of the body.

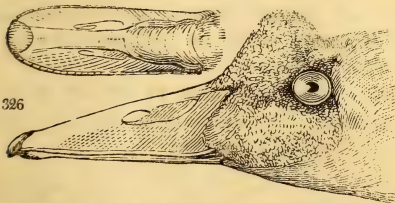
A. Hyperboreus. Wilson, pl. 68. f. 3. (a) Bernicla. Selby, pl. 44. (b)

DENDROCYGNA, Sw. *Tree Ducks*. Bill resembling that of a duck. Nostrils near the base. Feet lengthened. The toes long, and projecting beyond the membrane. Claws long, slender, and but slightly curved. Hind toe lengthened



D. arcuata. Horsf. Java. (fig. 325.) arborea. Edw. pl. 193.

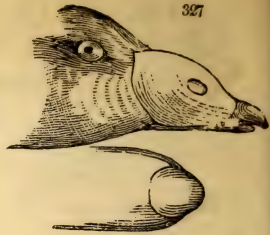
PLECTROPTERUS, Leach. Size large. Wings armed with naked tubercles or spines. Bill lengthened;



wide at the tip; the base with a naked protuberance. Rasorial.

P. Gambenses. Leach. Gen. Zool. xii. 2. 6. (fig. 326.)

**CEREOPSIS**, Lath. *Pigeon Goose*. (*fig. 327*.) Bill short, very much thickened at its base. Nostrils central. Tarsus with hexagonal scales. Toes semipalmated. The gallatorial type. *C. australis*. P. C. 206.



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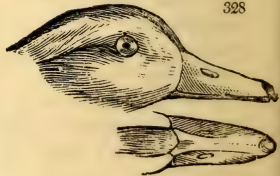
SUBFAM. ANATINÆ, Sw. *River Ducks*.

Bill broad and lengthened. Nostrils basal. Legs very short. Hinder toe slightly lobed. (*fig. 329. d*)

**MARICA**, Leach. *Widgeon*. Bill very short and small, of equal breadth throughout; the tip not narrowed. Tail long, pointed.

*M. Americana*. Wilson, pl. 69. f. 4.

**DENDRONESSA**, Sw. *Tree Ducks*. (*fig. 328*.) Bill small, short, rather compressed; the tip contracted. Nostrils towards the middle of the bill. Head crested. Tertiary quills recurved.



328

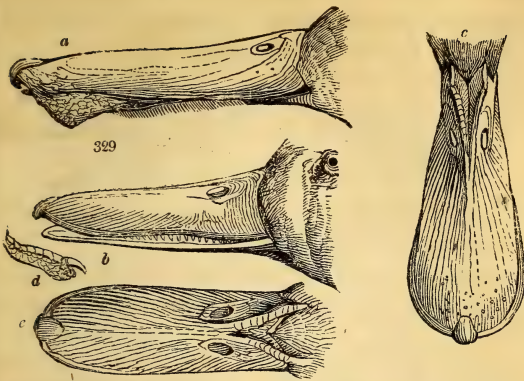
*D. sponsa*. Wilson, pl. 70. f. 3. *galericulata*. Edw. pl. 210.

**ANAS**, Linn. *Typical Ducks*. Bill flattened from the base, longer or as long as the head; the tip broad, and never contracted.

*Chauliodus*, Sw. (*fig. 330. b*) Bill of equal breadth throughout. The lamina fine, but not much projecting beyond the margins.

*C. Strepera*. Selby, pl. 51.

*Malacorynchus*, Sw. (*fig. 329. a*) Bill like the last; but the substance soft, and the tips of the upper mandible furnished on each side with a loose angular skin. Australia.



*Anas*, Linn. (fig. 329. c. 330. c) Bill excessively broad towards the tip, narrowed at its base. The laminae of the upper mandible slender, and considerably prolonged beyond the margins.

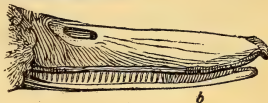
*A. clypeata*. Pl. Enl. 971.

*Boschas*, Sw. (fig. 329. b, c) Bill of equal breadth throughout. The lamina quite concealed. Nape of the neck crested. Tertiary quills generally curved upwards.

*B. domestica*. Selby, pl. 50.

*circia*. Ib. pl. 53.

*crecca*. Ib. pl. 54.



*carolinensis*. Auct.

*discors*. Auct.

*glocitans*. Selby, pl. 55.

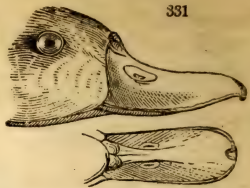
*Dafila*, Leach. (fig. 330. a) Bill and neck very long. Lamina almost entirely concealed. Tail much lengthened and pointed.

*D. caudacuta*. Selby, pl. 51\*. f. 2.

*TADORNA*, Leach. (fig. 331.) Base of the bill considerably

elevated, and somewhat tumid; the tip broad: the lamina not projecting.

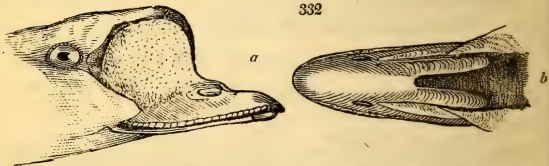
T. Bellonii. Selby, pl. 48.



SUBFAM. FULIGULINÆ. *Sea Ducks.*

Hinder toe very broad. (*fig. 333. d*)

SOMATERIA, Leach. (*fig. 332.*) Base of the bill enlarged into compressed and elevated lobes. Tertiary quills curved.



T. spectabilis. Selby, pl. 71. (*a*) mollissima. Ib. pl. 70. (*b*)

OIDEZIA, Flem. (*fig. 333.*) Base of the bill high and tumid, but not forming lobes; the tip contracted. Tertiaries simple.



O. perspicillata. Selby, 69. (*a*) nigra. Ib. pl. 68. (*b, c*)

FULIGULA, Ray. (*fig. 334.*) Bill depressed from the base; the tip abruptly and obtusely rounded, but not contracted.

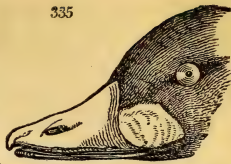
F. Ferina. Selby, pl. 63. f. 1.  
marina. Ib. pl. 66. (*a*)





**CLANGULA**, Flem. Bill elevated at the base, short, compressed; the tip rounded and contracted. Nostrils nearly central. Wings very short.

335



*vulgaris*. Sel. pl. 62. (*fig.* 335.)

**HARALDA**, Ray. Bill short, cylindrical; the base not elevated; slightly narrowed towards the tip. Upper lamina remote, and rather projecting. Nostrils basal, large; the aperture long, oval. Tail cuneated. The two middle feathers very long. Probably enters the next subfamily.

*H. glacialis*. Edwards, pl. 156. Selby, pl. 61.

SUBFAM. MERGANIDÆ. *Mergansers*.

Bill long, narrow; the tip abruptly hooked. Fisso-rostral.

**MERGUS**, Linn. (*fig.* 336.) Bill straight, slender, wide at the base, cylindrical beyond; the tip abruptly hooked: the margins of both mandibles serrated. Feet short, placed behind the equilibrium. Toes fully palmated.

336



*M. merganser*. Selby, pl. 57.

FAMILY COLYMBIDÆ. *Grebes*.

Bill more or less conic. Feet with the toes partly webbed and partly pinnated. Tarsus compressed.

**PODICEPS**, Latham. Bill long, conic, very straight, acutely pointed. Nostrils in the middle of the nasal groove. Tail none.

*P. rubricollis*. Selby, pl. 72. *cristatus*. Ib. pl. 53. f. 1, 2.

**DASYPTILUS**, Sw. Bill short, strong: the culmen arched; the tip bent. Under mandible with the

gonys very short and angulated. Quills internally emarginated. Tail none.

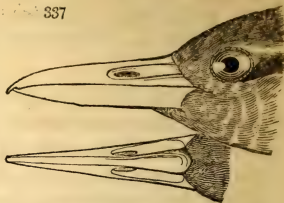
*D. poliocephalus*. Ill. of Orn. i. pl. 13.

PODOA, Illiger. Bill moderate: 337

the culmen curved towards the tip, which is notched.

Wings moderate, pointed. Tail remarkably broad, and rounded.

Rasorial. (*fig. 337.*)



*P. Surinamensis*. Pl. Col. 893.

COLYMBUS, Linn. *Diver*. Bill rather long, straight; the tips acute; the margins inflexed. Nostrils half closed by a membrane. Wings short, pointed. Feet with four toes, all connected by a palmated membrane, which is not lobed. The natatorial type.

*C. glacialis*. Selby, pl. 76.

#### FAMILY ALCADÆ. *Auks*.\*

Bill with the culmen more or less arched; the sides compressed. Feet entirely webbed. The hinder toe minute, or wanting.

URIA, Brisson. *Guillemot*. Bill moderate, slender. Frontal plumes advancing far upon the nostrils, but divided by the culmen. Feet slender, three-toed. Tenuirostral.

*Troile*. Pl. Enl. 903. *Brunnichii*. Tem. Man. ii. 926.

ALCA, Linn. *Auk*. Bill compressed and grooved as in the last genus, but longer than broad. Nostrils placed towards the middle of the bill. Wings abortive, fin-shaped.

*A. impennis*. Selby, pl. 82.

MORMON, Illiger. *Puffins*. Bill short, very high; the sides generally sulcated: the culmen strongly arched,

\* The individuals in this group are so few, that I have not considered it expedient to adopt the subgenera particularly as their natural series has not been worked out.

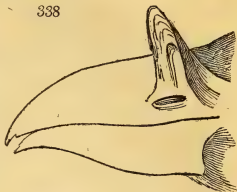
the tip hooked, and the gonys ascending. Wings and tail very short; the former capable of flight.

M. Alle. Pl. Enl. 917. glacialis. Gen. Zool. xiii. 40.

arctica. Selby, pl. 83\*. cirrhata. Pl. Enl. 761.

Torda. Ib. pl. 83.

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**CHIMERINA**, Escholtz. Bill compressed, smooth; base naked; the tips notched. Upper mandible with an elevated, compressed, horn-like protuberance above the nostrils. (*Esch.*)

*C. cornuta*. Esch. Zool. Atlas. pl. 12. (*fig. 337.*)

**PHALERIS**, Temminck. Bill short; the base depressed; the sides nearly quadrangular. The tip notched. Feet short, three-toed. Claws much curved. Wings with the first quill longest. Rasorial.

*P. cristatella*. Pl. Col. 200.

**APTENODYTES**, Forster. *Penguin*. Bill long, slender; the base of the under mandible considerably thickened. Plumage scale-like. Wings resembling fins. Fissirostral.

*A. Patagonica*. Pl. Enl. 759.

SUBFAM. PELICANIDÆ. *Pelicans.*

Bill long; the base wide; the tip of the upper mandible suddenly and considerably hooked. Face more or less naked. Wings very long. Feet exceedingly short. All the four toes united. Fissirostral.

**PLOTUS**, Linn. *Darter*. Neck excessively long. Bill perfectly strait, and acutely pointed; the margins finely dentated. Fissirostral.

*P. Americanus*. Wilson, 74. f. 1, 2. *Africanus*. Pl. Enl. 107.

**TACHYPETES**, Vieil. *Frigate-bird*. Bill with the tips of both mandibles curved. Wings excessively long. The tail deeply forked.

*T. aquilus*. Pl. Enl. 961.

**CARBO**, Meyer. *Cormorant*. Bill resembling *Tachy-*

*petes* ; but the under mandible is straight to the end, where it is truncated. Wings short. Tail hard, and rounded.

Cormoranus. Selby, pl. 84. cristatus. Ib. pl. 86.

**PELICANUS**, Linn. *Pelican*. Bill long, straight, depressed ; the tip greatly hooked. Chin naked, forming an extensible pouch. Middle claw entire. Rasorial.

P. onocrotalus. Pl. Enl. 87.

**DYSPORUS**, Illiger. *Gannet*. Bill entirely straight ; the base thick ; the tip acute and compressed ; the upper mandible sulcated. Culmen convex. Wings long. Middle claw serrated. Tenuirostral.

D. bassanus. Selby, pl. 86\*, 87.

SUBFAM. LARIDÆ. *Gulls*.

Feet lengthened, formed both for walking and swimming.

**STERNA**. *Terns*. Feet short. Wings and tail excessively long ; the latter generally forked. Bill straight at the tip. Fissirostral.

*Sterna*, Linn. Bill slender, very straight : the culmen and gonysequally curved towards the tip. Commissure straight. Nostrils basal, long, linear. Feet small, weak. Tarsus much shorter than the middle toe. Hinder claw curved.

S. Hirundo. Selby, pl. 90. f. 1. nigra. Ib. pl. 91.

**Thalassites**, Sw. Bill strong : the culmen curved from the base : the gonys short, and hardly angulated : the commissure curved. Nostrils towards the middle of the bill, oval. Feet strong. Tarsus longer than the middle toe. The hinder claw straight.

T. magnirostris. Spix, pl. 104.

**Phæton**, Linn. *Tropic-bird*. Bill as in the last, but the margins dentated. Tail short, but the two middle feathers excessively long and filiform. Feet very short, natatorial : all the toes connected by a membrane.

P. phænicurus. Pl. Enl. 979.

*Rynchops*, Linn. Bill excessively compressed: the upper mandible much shorter than the under.

*R. niger*. Wils. 60. f. 4.      *melanurus*. Part 5. No. 175.

*Gavia*, Brisson. General structure of *Sterna*; but the tail is even or rounded.

*G. leucoceps*. Pl. Enl. 997.

**LARUS**, Linn. *Gull*. Bill much compressed, straight, but the outer half of the culmen much curved. Gonys strongly angulated. Wings very long. Tail short, even. Feet moderate. Tarsi as long or longer than the middle toe. Hind toe very short. Typical.

*L. tridactylis*. Pl. Enl. 387.      *Sabini*. Lin. Tr. xii. pl. 29.  
*ridibundus*. Selby, pl. 92.

**LESTRIS**, Illiger. *Jager*. Bill moderate; the base straight, cylindrical, and covered with a cere, beyond which the culmen is arched, and the tip hooked. Gonys angulated. Feet slender, naked above the knee. Claws large, much curved. Tail graduated; the two middle feathers lengthened. Raptorial.

*Cataractes*. Selby, pl. 100.      *Richardsoni*. N. Z. pl. 73.

**DIOMEDIA**, Linn. *Petrels*. Bill straight; the end abruptly hooked. Nostrils tubular, opening in front, with the sides prominent and convex. Rasorial.

*Procellaria*. Bill shorter than the head. Tips of the under mandible straight and truncated. No hind toe, but a short claw. Nostrils simple.

*P. Capensis*. Edwards, pl. 90.

*Diomedea*, Linn. *Albatross*. Bill much longer than the head: the under mandible truncated. Nostrils simple. No hind toe or claw.

*D. exulans*. Pl. Enl. 237.

*Halodroma*, Illiger. Bill very short: the under mandible truncated at the tip. Nostrils internally in double tubes. Feet short. No hind toe or claw. Chin with a dilatable pouch. Natatorial.

*H. urinatrix*. Pl. Col. 517.

*Thalassidroma*, Vigors. Bill moderate. Both mandibles

curved at their tips. Nostrils in double tubes. Legs moderate or lengthened. A claw in place of the hind toe. Grallatorial.

T. cinerea. Selby, 102*.	Leachii. Ib. 103. f. 1.
Anglorum. Ib. 102.	oceanica. Pl. Enl. 993.
pelagica. Ib. 103. f. 2.	Wilsoni. Wils. 60. f. 6.

*Pachyptila*, Illiger. Bill broad, and considerably dilated at its base ; the margins with internal laminæ. Feet three-toed. Rasorial.

P. Forsteri. Ind. Orn. ii. 827.

**DROMAS**, Paykull. (1805.) Bill longer than the head, compressed, very straight, strong, depressed at the base. Gonys strongly angulated. Nostrils large, depressed ; aperture terminal. Feet long, slender, compressed. All the toes articulated on the same plane ; the posterior long and free, the anterior pal-  
mated as far as their last joint. Claws depressed. Wings moderate, pointed. Affinities uncertain. The grallatorial type?

D. ardeola. Pl. Col. 362.

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#### NOTES.

In reference to the observations on *Leptostoma*, page 139., I may observe, that this bird seems to have been described in France (some time after the specimen in question passed into the possession of the Zoological Society) under the name of *Saurothera Botte*.

The great delay in determining the apparently undescribed species enumerated in the systematic arrangement, and the lateness of their appearance, has prevented me from availing myself of some few ornithological publications ; as the late Numbers of the Zoological Proceedings, Gould's Ornithology of New South Wales, &c.

My suspicions that *T. orientalis* was a distinct species from that found in Southern Africa, has been fully confirmed by specimens of the latter just brought home by Dr. Smith. M. Lichtenstein has evidently mistaken them for one, his measurements being those of the African, which he has thought to be the same as the Indian. M. Temminck, and Dr. Latham, have both fallen into the same error. As the case, therefore, now stands, I should propose that the Cape species be distinguished by the name of *T. Capensis*.

## GENERIC NAMES NOT ADOPTED.

Amblyramphus.	Coriphilus.	Kampylorynchus
Apales, <i>Sw.</i>	Corythus.	Kitta.
Ara.	Cracticus.	Laniarius.
Arara.	Creadon.	Laniellus, <i>Sw.</i>
Aratinga.	Crex.	Laniisoma.
Arinaria.	Cursor.	Lanio.
Artamus.	Cursorius.	Lobipes.
Bethylus.	Cyclaris, <i>Sw.</i>	Lophyrus.
Bubatus.	Cymbops.	Macroactylus.
Bubo.	Cyphos.	Macroramphus.
Calodera.	Dasyptilus.	Megalotis.
Calopsitta.	Dendrositta.	Melias.
Calyptorynchus.	Dilophus.	Mergulus.
Campicola, <i>Sw.</i>	Domicella.	Micropterus.
Capito.	Drepanis.	Mimetus.
Cariama.	Edolius.	Nengetus, <i>Sw.</i>
Cassiculus, <i>Sw.</i>	Eclectus.	Nestor.
Catarrhactes.	Euphemia.	Œnanthe.
Cephus.	Eurynorhynchus.	Onocrotatus.
Chamæza.	Fedoa.	Opæthus.
Charmosyna.	Ficedula.	Ortigometra.
Chauna, <i>Ill.</i>	Figulus.	Parulus.
Cissopus.	Fratercula.	Pelidua.
Coccyua.	Gallinago.	Phalacrocorax.
Colaris.	Graucalus.	Philydor.
Collurio.	Guiraca, <i>Sw.</i>	Phimis.
Coracopsis.	Hæmatops.	Phæopus.
Coronica.	Hydrobates.	Piaya.
Corydilla.	Hypothymus.	Picumnus.
Corydon.	Ianthocincl.	Pionus.

Pitangus, <i>Sw.</i>	Saltator.	Syrnium.
Platypus.	Sittace.	Taccocua.
Polytelis.	Sparactes.	Tanyaptera.
Prinia.	Spathulia.	Tanygnathus.
Prunella.	Spermagra, <i>Sw.</i>	Tenamus.
Psittacodis.	Spermophila, <i>Sw.</i>	Tersa.
Puffinaria.	Spheniscus.	Triclaria.
Puffinus.	Sphenura.	Tropedorynchus.
Pyranga.	Splelectos.	Ulula.
Querquedula.	Stercorarius.	Utamania.
Rhinopomastes.	Strobilophaga.	Zapornia.
Rhynchaspis.	Sula.	
Rusticola.	Sycobius.	



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ON  
THE NATURAL HISTORY AND CLASSIFICATION  
OF  
B I R D S.

BY

WILLIAM SWAINSON, A.C.G. F.R.S.

VICE-PRESIDENT OF THE ORNITHOLOGICAL SOCIETY, ETC.

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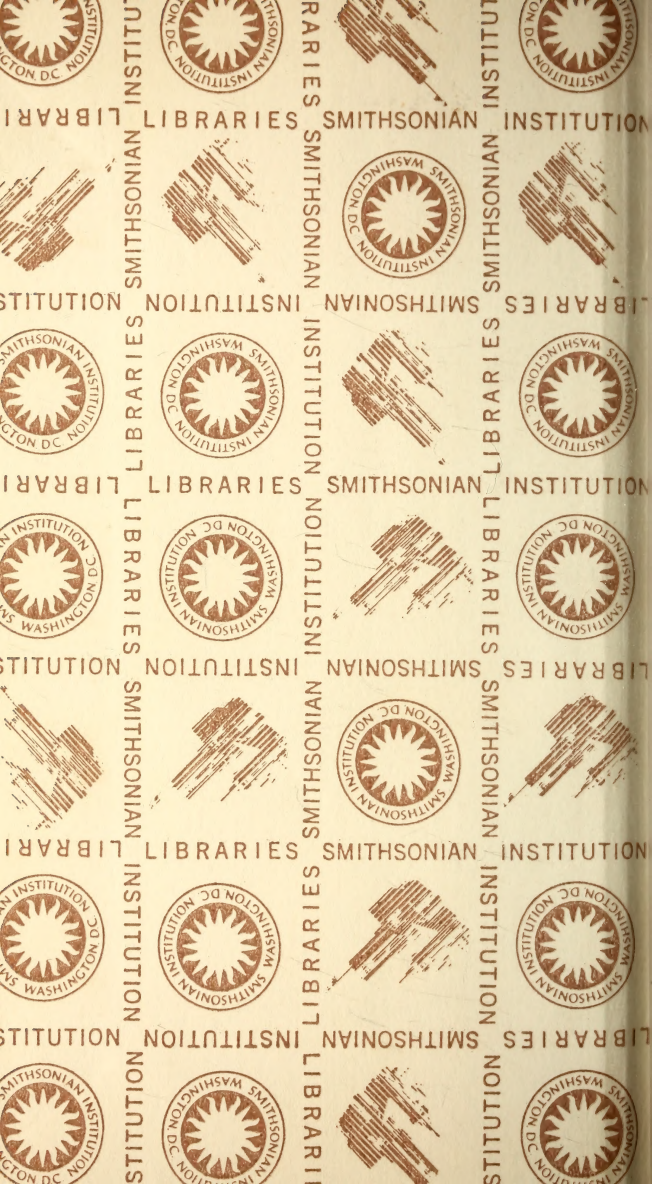
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