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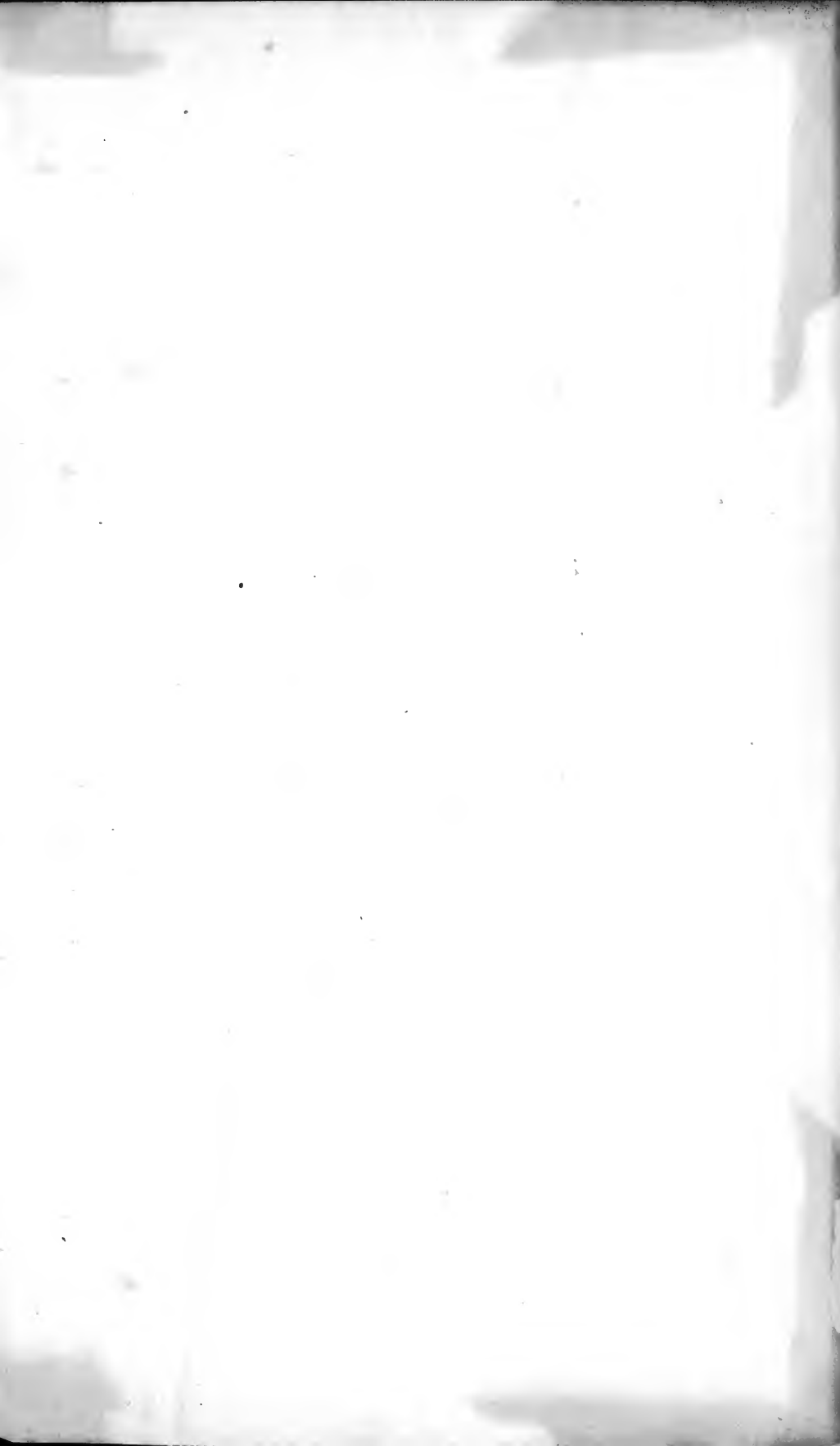
1848-49

ACADEMY OF NATURAL SCIENCES

OF

PHILADELPHIA.

Presented by *H. E. Strickland Esq.*
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TO

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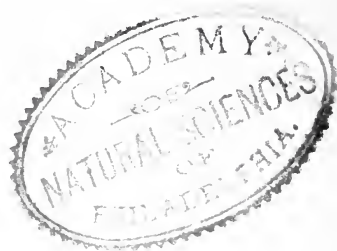
FOR

1848.

BY

SIR WILLIAM JARDINE, BART.

F. R. S. E., F. L. S., ETC., ETC.



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HINTS

FOR

PREPARING AND TRANSMITTING ORNITHOLOGICAL SPECIMENS

FROM

FOREIGN COUNTRIES.

THE following remarks intended as a guide for any traveller or sportsman, to enable him to collect and observe, may not be deemed an inappropriate introduction for "CONTRIBUTIONS TO ORNITHOLOGY." How many men, in all professions, often with time hanging heavy on their hands, are thrown into favourable opportunities for obtaining information! Men who have the ability and even the inclination to work, but who want some direction; and when asked, on their return from abroad, Why did you not get this or that? reply, "We did not know how to prepare them:" or, "We thought them of no consequence. Write us out directions, and we shall procure them another time." What opportunities are afforded to men in the army and navy: the latter, in particular, touching ever and anon at new lands, and followed even in their sea courses by the denizens of the air! In a well managed vessel, the surgeon has frequently much spare time; and his superior officers, when they see an inquiring mind, generally are, and always ought to be, willing to lend assistance. Merchants also have ample opportunities, from trading with the natives of foreign countries, and often in the interior; and how many young men of fortune make extensive tours, where some study or pursuit to engage their minds would be most advantageous.

HINTS FOR ORNITHOLOGICAL TRAVELLERS.

Shooting and sporting excursions, of late years, have been undertaken much beyond the limits of our islands, and may soon range to extra European lands; and it is a pity that these should only end as a temporary excitement, or an indiscriminate slaughter of animal life. These are generally well appointed, and carried out with great expense. The projectors often want only direction; and the assistance of a neat handed, or qualified servant to the party, would often, if not always, produce results of great benefit to our knowledge. Among this class of travellers and sportsmen, however, there are many very honourable exceptions; and we have soldiers and sailors, merchants, governors, and persons in office, and private gentlemen, who have all wrought zealously and heartily, and whose researches and discoveries have been most valuable; but in all our applications to friends abroad, or going abroad, we are constantly met with the request, "Do write us out directions, and give us a list of what you want." To the last, we invariably reply, *Send every thing*; and to the first we are about to comply, by printing directions for the use of our friends and correspondents who may require them.

We shall first describe the manner of preparing a bird as a skin, supposing that abundance of the proper materials and instruments are at hand, and the person in his own appropriated working-room. Any person with a moderate share of intelligence, and accustomed to use his hands, will be able to turn and accommodate his opportunities and means to the different situations in which he may be placed; and it must be kept in view, that in distant and little visited lands, where circumstances may sometimes occur which render it almost impossible to preserve or bring away perfect specimens, a skin in any condition, or fragments of it, the head, a wing, or foot, are always worth preserving.

The specimen being cooled, before commencing to skin, the mouth and nostrils should be cleaned of any blood or other matter, and the tow or cotton with which they may have been stuffed when killed, renewed, so as to absorb any liquid that may probably flow from them, and prevent it soiling the plumage. The specimen laid upon its back, should have the feathers of the belly separated or blown aside, and an incision made from about the middle of the breast or sternum to the vent; the skin should now be gradually

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separated at each side, until the legs appear, which should be either disjointed at the knees, or cut immediately above them with scissors, after which the skin becomes comparatively free, and allows the body to be skinned and cut out at the tail, which is best done by placing it, as it were, tail uppermost, and gradually skinning round until the rump can be cut through. During all this part of the skinning, and indeed throughout the whole operation, free use should be made of paris plaster, fuller's earth, or such substances, to absorb the blood or grease, both on the specimen and hands; and, for that purpose, a plate, containing one of these, should stand within reach. The tail or rump being cut through, the most difficult part is over; and, in the absence of any one to hold the specimen up, it may be tied by one of the thighs and hung from a nail, the operator turning the skin inside out, and gradually separating it from the body, disjointing the wings close to it; and after getting the head clear as far as the eyes, separating it at the junction of the neck, without cutting or injuring the skull. The brains are removed at the occipital hole: and the eyes, with a little care, are easily dissected out, without bursting the humours, by commencing at the posterior part, and cutting the adhesions and optic nerve before attempting to turn them out. All the other fleshy parts of the head must likewise be cleaned away and removed. In a few birds, such as woodpeckers, ducks, grebes, &c., the diameter of the skin of the neck is too small to pass the skull; and to get out the brain, eyes, and otherwise clean it, an incision must be made in the throat, or back of the neck, after inverting the skin, through which it can be easily turned out and thoroughly cleaned. The body being now completely removed, it remains to clean the inside of the skin from all pieces of flesh or fat remaining upon it, which, if the bird has been neatly skinned, should be very small; and a little pains devoted to taking the skin cleanly off, often saves much time afterwards. The wings must be pulled out and skinned, as far as the carpal joint (the second from the shoulder); and the bones, after being pasted or dusted with the preserving paste or powder, should be wrapped round with tow or cotton, to replace the space occupied by the flesh; the skin is then drawn over and the feathers put in position. In some birds, the *second* or *ulnar* joint of the wings may be more conveniently cleared of the flesh, by opening it on the under side, instead of reversing the skin from within. The

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same must be done with the legs ; and the end of the tail must be very carefully cleaned of all flesh, grease, the oil glands, &c. These being done, the bird is ready either to be set up and mounted, or made into a "skin." For the latter, it only remains to fill the skin, according to its size, with some soft material, such as tow, cotton, or wool, taking care not to distend it beyond or even so far as its natural bulk : previous to doing this, the inside of the skin should be well covered with whatever preserving paste or salve is in use ; and before inverting the head, it will be found more convenient to fill the orbits with cotton, which the skin draws easily over. The throat and neck may be stuffed from the mouth. Before the body is filled, the wings should be properly placed ; and it is sometimes convenient to tie the ends of the wing bones together inside. When sufficient stuffing has been used, the opening in the belly should be lightly stitched together. In conclusion, the skin should be put in the position desired, and so retained until dry, by a piece of cotton wool, linen or cotton cloth, or by a piece of not too stiff or hard paper, wrapped round and stitched or pinned. It is a convenient plan, to roll up and pin together a piece of paper, in the form of a *cone*, of suitable size to contain the head, neck, and breast of the bird while drying ; the feathers are thus kept smooth, and the paper cones may be left on the specimens after they are packed away. The drying may be assisted, if necessary, or in damp weather, by artificial heat, moderately applied at first.

For the purpose of preserving the breast and belly very clean, it is often recommended to make the first incision below the wing or on the back, but we do not consider either of those modes so good as opening the belly ; and if the specimen should be intended to be mounted, the stuffer generally sews up the dorsal or lateral incision, making the ordinary one in front for himself. No wire or stick should be inserted in the legs, neck, or inside the skin, with the intention of keeping it straight ; no salt should be used in any preserving paste ; no thread or string should be passed through the nostrils ; and the specimen should never be hung up to dry, as this always stretches the skin.

The best kind of *skinning knife*, is one of moderate size, with a scalpel formed blade, which, for home use, may be fixed in the handle ; but, to carry on excursions, is better made to close and to have two blades, one of which may be used for ordinary purposes.

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If circumstances permit, a stronger knife is preferable for large birds, and for most of the heavier sea fowl; but for general use, one of middle size and strength will be found the most useful, and sufficiently powerful, if carefully used, to dissect the strongest specimen.

The *scissors* should be dissecting scissors with lengthened handles, but the latter should be of considerable strength, those sold as dissecting scissors being generally too weak in the handles, and too elastic when used to cut a strong bone.

For scooping out the brain, a piece of iron with flattened spoon-shaped ends is commonly used, but we have found a quill, reed, or piece of flattened wood, a sufficient substitute, and do not recommend any thing for this purpose to be carried from home.

Needles for stitching up the skin, or holes in it, should be slender, but of considerable length, so that they can be put in and out without the fingers interfering with the feathers. They should be from two to four inches in length; and, I believe, are sold in shops under the name of "silk darning needles." Linen thread is best; and, except for the smaller specimens, where it may be required finer, what is called unbleached thread is preferable. Silk thread of any kind does not answer well.

The best preservative for the skin is *arsenical soap*; and, for convenience of carriage, it may be made up in pots or in square cakes. When used, it should be wetted with a hog's-hair brush, and laid over the skin, of the consistence of not very thick cream, pasting also the skull, rump, wing, and leg bones; and, in foreign countries, a little put over the soft parts externally, the legs, bill, naked skin or wattles, has been found useful as a protection against insects. Mr. Gould used this paste successfully for all his collections in Australia, and had it made up in cakes by Messrs. Wadworth & Housley, chemists, Broad Street, Golden Square, London. The prepared stock may however run out; and the following is the receipt for the paste alluded to, which will be prepared by any chemist or druggist, or almost wherever the materials may be procured:—

Camphor	5 ounces.
Arsenic in powder	2 pounds.
White soap	2 pounds.
Salts of Tartar	12 ounces.
Lime in powder	4 ounces.

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A mixture of the three first ingredients is sufficient; and for small or thin-skinned specimens, a less quantity of arsenic is requisite. For such, one part or a little more of arsenic to three parts of soap will be about the necessary proportions. The salts of tartar, if allowed to come upon the feathers, will change the colours; and the above receipt is given as that used by Mr. Gould and other collectors abroad.

The following is a receipt for a *powder*, which has been found to answer very well.

Tobacco (rubbed to a powder, or Snuff)	}	Equal parts.
Burnt Alum		
Black Pepper		

And to every ounce in weight add about a third part of arsenic in powder.

The best *stuffing materials* are tow or cotton: wool may be used, and generally fills most of the Australian skins; but it is often greasy, and on that account objectionable.

By a person at home, every work may be performed in the manner and with the materials we have now mentioned; but every one will contrive little conveniences for himself, and fall into his own mode of working. To a person travelling abroad, every thing cannot always be at hand, and the less that can be carried the better: knives, scissors, preserving paste or powder, and a little cotton, are perhaps the most necessary. We have skinned many a specimen with a very ordinary knife alone, yet a few such as have been mentioned may be useful for various purposes, and one need scarcely ever be at a loss. Scissors are convenient but not indispensable; so are needles. Thread is more necessary, as it may be used to tie round the skin and keep it together in the want of any thing better. In the absence of arsenical paste or powder, tobacco or snuff may almost always be procured; and peppers, burnt alum, or arsenic alone, are all good substitutes. Salt or saltpetre should never be employed; and corrosive sublimate, so frequently recommended, should be carefully and sparingly used. If the solution is too strong, the skin, when wetted for mounting, or for any purpose, is quite brittle, and breaks into holes as though burnt. We would only use this for strong or very greasy skins. For stuffing, where tow or cotton cannot be obtained, any dry material may form a substitute. On shipboard, for large species, oakum answers very

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well, and is at the same time a preservative. We have received specimens which have been stuffed with fine grass, leaves, moss, lichens, fine lycopodiums, and ferns: in short, any thing *dry*, that keeps the skin slightly apart, will supply a temporary want, until opportunity occurs of procuring a more abundant or better material.

Much of the value of collections consists in the observations that accompany them, and in the localities of the specimens being authentically recorded. This is best accomplished by a card or vellum ticket, attached to the leg of each, and it should be *looped* on, as it often slips if knotted. On this a number, the locality, the date, the sex, ♂ ♀, the colour of the irides, or any remark that it will contain, should be written *at once*. The number should refer to a memorandum book, where, when possible, all extended remarks that can be collected should be inserted: locality and nature of the country; season of the year when taken; native name; superstitions regarding; uses for food or dress; proportional abundance as a species; if migratory, and the seasons of appearance and disappearance; nidification; note; food; colour of soft parts; in short, every obtainable information. It would be convenient to carry abroad a quantity of the labels, numbered and threaded, ready to loop on; and so soon as the bird is killed, one should be attached, and the note made as a future guide for the memorandum book: it should never be delayed, as among the multiplicity of objects, confusion will now and then occur. To these remarks, sketches of the head or soft parts, and naked skins, wattles, &c., coloured from the objects before they have faded, are very valuable additions; and, for this purpose, a small stock of water-colour drawing materials should accompany the collector's other tools. These sketches require to be very slightly made, the tints being laid on pure and of the natural depth. Where a species is found feeding on some particular insect, or fruit, or berry, and the collector is not an entomologist or botanist, it would be desirable to have a small quantity of these specimens. These may either be sent in spirits, or the flower of the plant dried, or a few specimens of the insect sent dried in a small pill or card, or what is better, tin box, each numbered with the number corresponding to the label on the specimen. A collection, accompanied by such memoranda, would be worth, in the market, double, if not triple to that of one indiscriminately made, even though the specimens were in finer preservation.

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The nidification of birds is an important portion of their economy, and the nests and eggs form interesting additions to a collection. Some of the former, from their size and loose structure, are difficult to transport, and a memorandum regarding them may suffice; but many of the smaller species build structures of extreme beauty and neatness, which can be transmitted without any great trouble or expense. These should be brought home attached to the branch or twig supporting them; and, when packed, should have some soft substance put inside to prevent them being squeezed together. The eggs should be blown on the spot when taken from the nest: it lessens their liability to be broken; and the collector should, if possible, be provided in his rambles with a few tin boxes, for the purpose of carrying the more delicate in his bag or basket. They may be blown either from two holes, the one a little upon the lower side; or the contents may be emptied, if they are too far incubated, from a larger hole on the one side. Before laying aside or packing, the inside should be rinsed out with a weak solution of corrosive sublimate, which prevents or destroys mites or other insects. The name of the species should be *written* on each egg, with a number referring to it in the memorandum book. The outside of the egg should *never* be coated over with gum or varnish.

The specimens having been properly prepared and thoroughly dried, it still remains to keep them safely until a sufficient store has been got to form a parcel, and to pack them well and carefully for travelling; for all the labour of a long season may be lost by carelessness of packing, or by tumbling them loose into some box, in which the rolling of a ship, or the admission of sea-water, may reduce the bird-skins into a bundle of felt. The most important precautions are, to dry the skins sufficiently, and to keep them in a place as well aired as circumstances will admit, until ready to be sent off. In warm countries, however, this is frequently very difficult, from the depredations of ants, cockroaches, and the larvæ of some coleoptera; and strong cases, with well fitted lids, are indispensable. Various spieces, intermixed with the specimens, are used with advantage. In this country we have found pounded hellebore a very cheap and good *insectifuge* (but disagreeable assistant); but camphor, or any of the aromatic oils, are the best, the latter or turpentine being particularly obnoxious to insects; and turpentine, if highly rectified, may be used without injury to the feathers.

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Cases which have to undergo a long sea voyage should be lined with tin; and, when packed, the lid should be soldered down: this may prevent the accidental admission of sea water. If the tin lining is not available, the case should be closely made, and the joinings pasted up with strong paper on the inside, and pitched or painted over on the outside. In packing, each skin should be, if possible, wrapped in paper or such like material, particularly those whose plumage is easily soiled. They should be packed firmly; for it must be recollected, that the jumble of travelling makes them settle down, and leaves an open space, which causes the specimens to be rubbed together. Any soft material is of use in packing the corners; and if the box is large, it might be placed advantageously in thin layers to separate the specimens. In the want of some better packing material, moss, lichen, or fine lycopodiums, thoroughly dry, answer exceedingly well among paper-wrapped specimens, and have the advantage of being, when damped, useful to the botanist afterwards. Camphor or spices may be usefully put in before the case is shut up, but no oils or liquids should be put in a travelling cargo. The smaller sized eggs of birds may be packed with cotton, in moderately sized pasteboard boxes, which, being light, do no harm placed among the skins. Some of the stronger large eggs will travel quite safely, rolled in cotton, and placed in the corners; but if a sufficient number has been collected, particularly of sea fowl, they are best packed in a separate box, with sawdust, chopped hay, moss, or fern. Finally, the case should be carefully and distinctly addressed, and the name of the vessel, her captain or master, and port to which she is sailing, should always be sent by post letters, with an invoice or receipts, to the person for whom the consignment is intended; several instances having occurred, in our own experience, where cases could not be traced from the neglect of these precautions.

In the present state of science, where more is required than an acquaintance with the external forms and characters only, it is very desirable that opportunities should be given to examine the internal structure and the skeleton. For this purpose, it is important that the skeleton or entire bird should be preserved or transmitted. Distinct forms and genera, particularly those not European, are the most important for study; next, species where some peculiarity of structure is known or supposed to exist. Among the number

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of species which are likely to be brought to a collector abroad, there will be many unfit for good skin preparations, the skull or sternum of which should be kept; and where the species is abundant, two or three entire skeletons should be prepared. The sternum, or breast-bone, with the shoulder-bones and merry-thought attached, may always be separated from the carcase, after a bird is skinned, and will be highly valuable to comparative anatomists, provided the name of the species to which each specimen belongs be carefully recorded. This is easily done by clearing the flesh roughly off, and hanging up in the sun to dry, which is assisted, if the specimen, after clearing, can be steeped in water for twenty-four hours before hanging up. When hung up, the neck, legs, and wings, should be retained in the least possible space, both on account of economy in packing, and for safety to the specimen. Any of the soft parts that may be considered important, can only be sent in spirits, and should be put in immediately on being removed from the specimen. To transmit the specimens entire, two modes have presented themselves to our experience, both of which answer well if common care is taken in putting them up. The first is sending the birds entire in spirits. In doing this, specimens may be put from time to time in a jar of moderate size, kept in a cool place, care being taken not to put in any which are tainted, even slightly, with decay; a small incision should be made in the belly to admit the spirits inside. When ready to be despatched, they should be removed to another jar, and fresh good spirit supplied. The specimens should be put in with the feathers on, so that they can be recognised afterwards, and too many should not be put together, the collector bearing in mind, that a certain quantity of spirit will only preserve a certain quantity of animal matter; and although, in any case, they might serve for skeletons, they would otherwise be quite useless for any examination of the soft parts. The top should be securely closed and pitched or painted over, to prevent escape of spirits during the transmission. Wax is dissolved by spirits, and is therefore objectionable as a closing medium. A thin sheet of Indian rubber is the best material for closing the mouths of spirit jars; next to that is a cork bung, covered with *linseed poultice* or dough, and then a bladder or piece of leather tied over it. If the bladder is *poisoned* with arsenic or corrosive sublimate, it will be the more secure from insect enemies. The second mode of sending specimens home entire, is by

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using strong brine, or salt and water, instead of spirits, using the same precautions in packing and closing up; and, for the after examination of the soft parts, this is perhaps preferable to spirits. These two materials may be procured almost any where, and will serve every purpose, if the precautions mentioned are attended to. All skeletons and parts of birds should be labelled, stating to what species they belong, and if possible the sexes, ♂ ♀, marked. The jars or bottles should all be packed in cases. Wide-mouthed pickle and preserve bottles answer the purpose admirably, hold a large quantity, generally as many as should be put together, and are not difficult to procure at foreign stations. They travel well in a moderately sized case, packed with sawdust.

ADDRESS.

SIR WILLIAM JARDINE, BART.,
JARDINE HALL,
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N. B.



PAPYROGRAPHY
AND ITS
APPLICABILITY TO THE ILLUSTRATION
OF
ORNITHOLOGY.

RESIDENT in the country, and at a distance from any large town where engraving or lithography were practised, we have for a long series of years felt the want of some mode by which we could transfer to paper the work of our own pencil. Engraving requires a large apparatus for its use, lithography still larger, and no person but one who has had occasion to illustrate various departments of natural history, can have felt the delay and expense, or the difficulty to obtain fidelity and character, which attends engraving upon either metals, stone, or wood. It is therefore a great satisfaction to state, that a mode has been discovered, that will produce true representations of a sketch or drawing, and which, with a little farther experience and practice, will, we have no doubt, supply this most essential want, and permit a person, far from conveniences, to obtain faithful impressions of what he has himself drawn. It will be one object of these "Contributions," to employ the various styles of art at command for their Illustration, and to give every information that can promote Ornithology, either practically or scientifically; and it is therefore with much pleasure that we now print an account of the process of Papyrography, which, at our request, has been written out by Hugh E. Strickland, Esq., its

PAPYROGRAPHY.

discoverer. In addition to facility of transport, and of giving the exact lines penned or drawn by the artist, it has also the recommendation of economy; and although we do not now mention the cost of the specimens given, until we have more experience in the working of the art, we can state, that it is more moderate than any other style of engraving or lithography we have yet practised.

“The mode of delineation for which I propose the name of PAPYROGRAPHY, is a peculiar application of the anastatic art. Anastatic printing consists in transferring to a plate of zinc any design made with an *oily* material on paper. From the impression so transferred, any number of copies can be taken on paper by the same process as in ordinary zincography or lithography.

“The original design on paper, from which the zinc plate is to receive its impression, may be produced either by *printing* (from types, copperplate, wood, stone, &c.), or by the *manual* process of *writing* or *drawing*. The only requisite is, that the vehicle for this design be of an oleaginous nature. In the case of letterpress and engravings, the oily matter is supplied by the printer's ink; but in regard to drawings, there are difficulties in the way of using greasy substances, which are avoided by mixing up the colouring matter, not with *grease* but with *soap*. Thus (as is the case also in lithography), the inks used for writing, and the chalks for drawing, are made with a soapy ingredient. In the act of transferring the design to the zinc, an acid is employed, which neutralizes the alkali of the soap, and brings the latter back to its original oily condition.

“Anastatic printing was originally applied only to the reproduction and multiplication of impressions from type or engraved plates. It was afterwards found, that the soapy ink used by lithographers was capable of producing an anastatic transfer; and consequently, that any *writing* or *pen etching* might be multiplied to an indefinite extent by this process. But it was not until February last that the art of producing anastatic impressions of *chalk drawings* was attained. (See *Athenæum* of Feb. 12, 1848). My attention being at that time called to the various applications of anastatic printing, I was induced to try the effect of *lithographic chalk*; and I found that drawings made on paper with this

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substance could be readily transferred to zinc, and would supply an indefinite number of impressions. These impressions were not only perfect *fac similes* of the original drawing, but were so exceedingly similar in appearance to lithographs, that it required a practised eye to detect the difference.

“ This new process, the original design being made on *paper*, I have distinguished by the name of *Papyrography*. Though it probably admits of being brought to as great perfection as lithography, yet there is no reason to expect that it will surpass that art. Its advantages are therefore *practical* rather than *artistic*; but they are not the less deserving of attention on that ground. These advantages may be thus enumerated:—

“ The great size and weight of lithographic stones, or even of zinc plates, are very unfavourable to their general use. A person who wishes to practise lithography or zincography, must either reside in the vicinity of a lithographic printer, or incur great expense in the packing and transmission of heavy stones or plates.

“ But if he adopts the Papyrographic process, he has merely to draw on paper with *lithographic chalk* instead of a *lead pencil*, and to send his design by post or otherwise to an anastatic printer, who will speedily strike off the requisite number of impressions.

“ If a person is so situate as to be unable to procure lithographic stones, or to send them to a printer, his only resource, if he wishes to multiply copies of his designs, is to send them to some lithographic artist or engraver, who, however great may be his skill, or however perfect may be the copy which he produces, can never enter into the ideas, or fully realize the spirit of the original designer. No one who has had an opportunity of comparing prints with their prototypic drawings, when they are the work of different artists, can have failed to be struck by the superior boldness and originality of the latter. Now by the Papyrographic process, all intermediate assistance is dispensed with, the actual touches of the original artist are transferred to the metallic plate, and are reproduced by the press with unerring fidelity, to an unlimited number of impressions.

“ Even when an artist possesses a knowledge of the lithographic art, and the requisite facilities for practising it, he still lies under the inconvenience of being obliged to *reverse* his drawings, in order that they may assume their true aspect when printed. Those who

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have never tried it, are little aware of the difficulty of *drawing backwards*—a difficulty which has deterred many artists from the pursuit of lithography. The Papyrographic process is entirely free from this objection; for the drawing being made *direct* on the paper, becomes *reversed* by being transferred to zinc, and the impressions taken from the latter are consequently *direct*, as in the original.

“ It is thus evident, that Papyrography has great practical advantages, from its ease and simplicity, which render it attainable by any person who can use a pencil. A traveller who wishes to preserve for publication the sketches which he may make in foreign regions, is enabled, by the mere substitution of lithographic chalk for plumbago, to reprint, without further trouble, the actual drawings made in the field, in all their freshness and originality. I may refer, for examples of the Papyrographic art, to the views of Rodriguez, Plates III.* and IV.* of the History of the Dodo, by Dr. Melville and myself, just published; also to the coloured plate of the Dodo, Plate III. of the same work.

“ Papyrography seems to be more especially adapted for landscapes and for such other objects as admit of a bold style of drawing. It is not, however, unsuited to other subjects, and the present work contains some examples of its use for the illustration of ornithology. As these are the first experiments of the kind which have been made, they must not be severely criticised, but should be regarded rather as guides to further improvements than as being perfect in themselves.

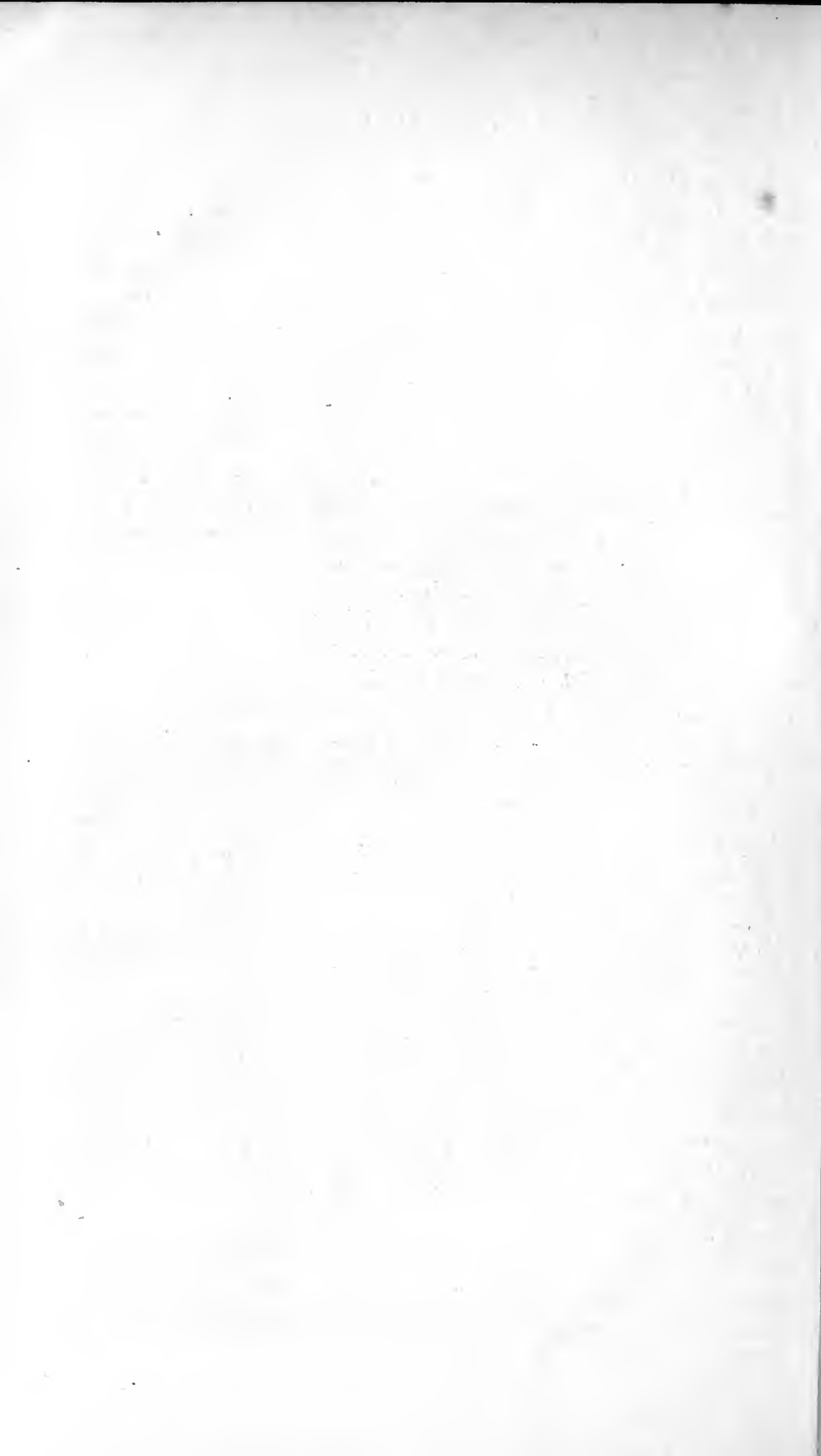
“ The artist, who is disposed to try his hand at Papyrography, should endeavour to give to his drawing the effect of a good lithograph. A lithographic stone, properly prepared, presents a hard level surface, apparently smooth to the touch, but not so smooth as to be *glossy*; for it really consists of innumerable small conical elevations. The crayon used in drawing on the stone touches the summits of these elevations, producing on each a small black dot—the aggregation of which dots causes that fine soft tint, which is characteristic of lithography. Now the surface of *paper* consists, not of *vertical* prominences, but of *horizontal* fibres, which receive the impression of the pencil; and hence a drawing on paper, when examined by a lens, presents an aggregate, not of *dots*, as in a lithograph, but of short irregular *lines*. This discrepancy of

PAPYROGRAPHY.

surface in the two materials has not yet been overcome by art, though it seems likely, that by pressing damp paper against a grained stone, or by mixing some finely powdered ingredient (not calcarious) with the fibrous material of the paper, a surface may be produced, which shall possess the desired structure. In the meantime, this object may be in some measure attained, by using paper of a hard fine surface, and by stretching it upon a smooth drawing board, a slate, or other level and unyielding material. The best kind of paper for Papyrography seems to be good drawing paper, *smooth*, but not *glossy*, as in the latter case, the chalk rubs over it without producing a clear definite stroke. The 'metallic paper' used for note books also answers exceedingly well; but care must be taken that no calcarious matter is contained in it, as sometimes happens, for in that case the acids used in transferring will cause effervescence and spoil the drawing.

"The best lithographic chalk should be used: it ought to be of considerable hardness, and cut to a fine point. The design may first be sketched with a common pencil, so as to admit of alterations and corrections; for the marks produced with plumbago do not reappear in the anastatic impressions, whereas the lines drawn with lithographic chalk are nearly indelible. In drawing with this chalk, the desired effect should, as far as possible, be produced *at once*, by means of clear well defined strokes; for if the darker parts are much and repeatedly worked over, they are apt, in printing, to produce a *muddy* effect, from the blending together of the minute specks which compose the tint.

"When the drawing is thus prepared, the next step is to get it printed. Now, anastatic printers are very scarce, the art having been only recently introduced into this country, and I may therefore save further trouble, by mentioning the name of Mr. Delamotte, Broad Street, Oxford, as being a skilful printer of Papyrography, and other branches of the anastatic art. The drawings, when sent to the printer, should have a sheet of smooth paper laid over them, to prevent rubbing, and may be packed either flat between two boards, or in a roll of sufficient strength to resist compression."



CALENDAR OF ORNITHOLOGY,

1849.

THE importance of the registration of "*periodic phenomena*," appertaining to animals and plants, has been long acknowledged and advocated in different periodicals and works, writing of and devoted to natural history; and sundry calendars have been published, which although they contain many points worthy of observation, and were sometimes very amply made out, were not within the reach of all observers, and did not serve as a guide for the uniform registration of the phenomena. In our numerous works relating to the Ornithology of the British Islands, we have many observations and partial lists of the appearance and disappearance of our winter, summer, and occasional visitants. The migrations; flocking and congregating of species after incubation; disappearance of certain species, and their occurrence again after a period of years; the flights and doings of birds have all had some attention given to them. Many of our friends have kept private notes of these occurrences, and we have ourselves observations made over a period of nearly thirty years; but all these are neither kept to any plan, nor accompanied with notes of the temperature, weather, and other circumstances which would have added greatly to their value. They are made in various localities, and in various

years and circumstances; and however interesting the task, it would entail much time and labour to reduce them to any available order. If, then, the more important points in the economy of our native species could be registered on some simultaneous and regular plan, interesting information and details might be elicited, and an insight into the laws which regulate their motions and changes, be in a short time obtained.

For the above purpose, a set of Tables have been prepared for the present, the concluding number of the "Contributions for 1848," in such time as will enable the month of January, with the next whole year, to be observed and registered; and accompanying the number, there is a duplicate copy, printed on thin paper and with printed address, which it is requested may be filled up and posted in the first week of January 1850, when, if health and circumstances permit, a summary of the registers and observations returned will be drawn up and printed with an early succeeding number.

For the better filling up of these tables, the following observations may not be inappropriate:—

The tables have been drawn up, as far as possible, to suit any locality; at the same time, many omissions may have been made, which experience in a future year may remedy, and there may be many things inserted which are not applicable, and may appear useless in certain districts. Thus, the return filled up in Orkney, will produce a very different appearance from one made in the middle or southern districts of England.

In these returns, it will be very desirable to know the elevation above the sea as nearly as possible; to have a general register of the temperature and weather, with a short description of the country, the geological nature of the soil, and the character of its vegetation around the localities where the observations are made. In the curious and interesting subject of migration, particular attention is desired. The average temperature at the times of appearance and departure; the direction of the wind; the general character of the weather; the condition and progress of vegetation, should all be observed. It might be supposed, that the arrival of the migratory species in other countries would be influenced more by the climate of that from which they departed, than of that to which they came; that an earlier frost, or mild weather, would have the effect of driving them away

or inducing them to prolong their departure; in this country, however, though a cold autumn has an evident effect on the time of the departure of the swallows, and many of our summer birds, a mild spring does not always hasten the departure of the winter visitants. The arrival of some summer birds, as the wheatear, does not seem at all influenced by the mildness or continued severity of the spring here; but we have observed, that mildness and advance of vegetation in this country, does make a difference in the time of appearance of several species, particularly the *Sylviadæ*; and it may be asked, whether the progression of these and others from Southern Europe and Africa is gradual, advancing with the seasons? The laws which regulate the migratory zone of some species, are not probably applicable to such as appear to start at once and fly to their destination. The great mass of swallows depart from this country at once, but the appearance of their numbers is somewhat more gradual. The *Sylviadæ* appear gradually. The migratory thrushes again, come and depart at once. So also do the snipes, woodcocks, and others of the *Scolopacidæ*. If resident on or near the sea-coast, attention should be paid to the ornithology after remarkable storms, particularly during March and April, October and November; and both on the coast and inland, during these months, when migration takes place, and the young are leaving their breeding places and congregating, many rare species have been met with, driven out of their ordinary tract; and vast flocks of species, generally few in number, sometimes in the same way appear, showing the influence, climate or the seasons may have in the distribution of animal life. On the coast, it is also curious to mark the habits of the different sea-fowl previous to, or after the occurrence of a storm, or any marked change in the weather.

Independent of regular migration, by which we mean the arrival of some birds (not at other seasons found in our islands) in spring, for the purpose of incubation, and then remaining with us during the summer months; or the arrival of some birds in late autumn from another county, and remaining during the winter months, apparently to enjoy a larger supply of food and a milder climate, not afforded by their more northern summer quarters; there are large accessions made to the numbers of some permanently resident birds, either altogether from another country, or by a partial migration from one locality to another temporarily more suitable. In

many districts, a large addition is received in autumn to the stock of our common thrush and blackbird. So is there also of the common snipe, in many places where it breeds and is permanently resident. They arrive before or about the usual migratory period, and are probably supplied both from abroad and from the more exposed districts of this country. Many of the hawks disappear altogether during spring and summer, seeking the wilder and more unfrequented grounds to breed and rear their young. They reappear again in their usual haunts about the middle or end of September. Along our shores and sea marshes, vast numbers of the plovers, sandpipers, curlews, &c., spend the winter, many of which have merely returned with their young from a more inland breeding resort. The numerous congregations of the young, in autumn, assembling in large flocks together, show another kind of migration, very marked in the black and white wagtail, chaffinch, titmice, lapwing and other plovers, &c. A few species, again, which spend the whole season of incubation in other parts, are seen once or twice yearly for a short period only. The short-eared owl, which in some parts of England is met with regularly about the commencement of the winter migratory period, is in great part only on return from the more northern parts of this country, where it is known to breed. The ring ousel breeds in the alpine districts of England and Scotland, but is only seen upon the English downs, and among the mountain ash trees and cottage gardens in Scotland, for a few days, in going and returning to and from their breeding quarters. So it is with the common dotterel upon our lower moors, and large numbers of our sandpipers, &c., are also only seen for a day or two, in similar circumstances.

The periodical change of colour in the plumage of birds is often very marked; it is incidental in great measure to the season of incubation, previous to which it gradually approaches completion; and, as that important time arrives, it, along with the voice, obtains its fullest vigour, clearness and brilliancy, and sometimes puts on changes of great contrast with the full and usually chaste winter garb. These changes are most characteristic and distinct in the waders, water fowl, and gallinaceous birds, and among these are almost general; in other families, although a greater brilliancy always occurs, it is only in some that the changes are very marked. In some species the change takes place by a loss of some parts of

a feather, thereby bringing into view some other portion, and producing a different tint; in others, the colour of the feather entirely changes. These variations take place more or less rapidly with the seasons; but in some instances, the change is effected in a day or two, as in many of the plovers and sandpipers, some ducks, and the head of the black-headed gull, &c., so that exactness in the registration of them should be observed. Some of our summer visitants assume their breeding dress after arrival here, while others are partially changed, as if the operation had commenced and was going on at the same time with the instinctive desire to migrate. And again, on the cessation of the duties of the male, does the brilliancy begin to fade, and the dark or rich contrasted tints to blend into a plumage broken and worn, and then commencing to be renovated by a new moult—all these mutations are worthy to be noted, and can be easily done at the same time that other facts are registered.

It is during this same important period that a great change periodically takes place in the song and voice of birds. Many species sit and utter their call from some selected spot, which is frequented day after day; but others practise peculiar modes of flight, calling as they fly. The pleasing song of our warblers and thrushes, the call of the pigeons and cuckoo, are familiar examples of the first. The towering flight of the greenfinch, and the rise and fall of the pipits singing as they fly; the drumming and flight of the snipe, and the shrill shaking whistle of the curlew, are examples of the combined exercise; but in every species there is a change more or less marked, which will be easily seen and noted by a practised or willing observer.

As previously mentioned, the following tables have been drawn out, as far as possible, for Great Britain generally; at the same time they may be in part inapplicable to several districts, and particularly to the insular localities in the north, from which, however, we would hope for returns; but in these, if there is a scarcity of wood, and a limit in the numbers of the land or arboreal species either migratory or resident, the arrival and departure of the sea-fowl to breed, those that surround the shores in winter, and those that return regularly to roost at night, will be of great interest. We have no account of a rock or island, narrow in extent, minutely drawn in regard to the daily and regular habits of its occupants.

St. Kilda, Ailsa Crag, and even the Bass Rock, would yield an interesting daily journal, and we do hope for some interesting returns from our northern islands.

There is yet another point worthy of attention, that is, the change in the general ornithology of a district or locality which has taken place within a limited period, by an alteration of its physical character; by improvement, cultivation, draining; by planting and the increase of wood; by the rooting out and destruction of copse or natural wood; by the introduction of masses of some particular tree or brushwood. All these matters have a much greater influence on animal life than at first imagined; and in the space of twenty or thirty years, we have seen the character of a locality almost changed, by the forsaking of some species and the coming in of others. These changes go gradually on, but are at last complete, being naturally incidental to the artificial causes above mentioned.

CALENDAR OF ORNITHOLOGY,

1849.



CALENDAR OF ORNITHOLOGY for 1849, kept at _____

in the _____ of _____

by _____

Elevation above the sea about ____ feet.

JANUARY.

1	Occurrence of rare or occasional visitants from severity of season
2	Species leaving their usual haunts, and resorting to other locali-
3	Maritime species moving to rivers and inland lakes.
4	Habits of species common to district — <i>a</i> becoming more domestic
5	Species preparing to incubate — <i>a</i> by commencing song or call —
6	
7	
Date.	PHÆNOMENA.

JANUARY.

or other causes.
ties for food or shelter.

— *b.* congregating in flocks or small groups — *c.* change their usual food.
b. visiting breeding stations, &c.

Temperature.	Wind.	WEATHER AND REMARKS.

FEBRUARY.

- | | |
|---|--|
| 1 | Species which had changed locality from severity of season or |
| 2 | Species preparing to migrate or partially migrating— <i>a.</i> congrega- |
| 3 | Species preparing to incubate — <i>a.</i> by commencing song or call— |
| 4 | Species partial migrants returning to summer haunts. |
| 5 | Species maritime leaving rivers and inland lakes. |
| 6 | |
| 7 | |

Date.

PHENOMENA.

FEBRUARY.

other causes — *a.* remaining — *b.* removing.
ting — *b* passing at evening or during night.
b. visiting breeding places — *c* roosting at breeding places — *d* pairing.

Temperature.		Winds.	WEATHER AND REMARKS.

MARCH.

- 1 Winter migrants congregating previous to departure.
- 2 Winter migrants passing during night or in evening northwards.
- 3 Winter migrants departed.
- 4 Species commence incubation — *a.* nest completed — *b.* eggs lay-
- 5 Partial migrants, temporarily visiting on way to breeding haunts.
- 6 Summer migrants arrived.
- 7

Date.

PHÆNOMENA.

MARCH.

ing or laid — *c.* song matured or perfect — *d* plumage changed.

Temperature.	Winds.	WEATHER AND REMARKS.

APRIL.

- | | |
|---|---|
| 1 | Summer migrants arrived. |
| 2 | Winter migrants still remaining. |
| 3 | Migrants and partial migrants temporarily visiting on way to |
| 4 | Summer plumage — <i>a.</i> changing — <i>b.</i> matured. |
| 5 | Nidification completed — <i>a.</i> female sitting — <i>b.</i> young hatched — |
| 6 | |
| 7 | |

Date.

PHENOMENA.

APRIL.

breeding haunts.

c. song, breeding call or flight matured and perfect.

Temperature.		Winds.	WEATHER AND REMARKS.

MAY.

1 2 3 4 5 6 7	Summer migrants arrived. Nidification — <i>a.</i> young hatched and fledged — <i>b.</i> left nest—
Date.	PHENOMENA.

MAY.

c. song or breeding call and flight ceasing.

Temperature	Winds.	WEATHER AND REMARKS.

JUNE.

- | | |
|---|---|
| 1 | Incubation completed. — <i>a.</i> young abroad. |
| 2 | Species commence second incubation. |
| 3 | Song — breeding call ceased. |
| 4 | Moult commencing. |
| 5 | |
| 6 | |
| 7 | |

Date.

PHENOMENA.

JUNE.

Temperature.		Winds.	WEATHER AND REMARKS.

JULY.

- 1 Second incubation completed.
- 2 Song — breeding call and flight ceased.
- 3 Young assembling in groups in gardens, &c.
- 4 Species that have left their breeding stations.
- 5 Moulting, state of.
- 6 Young plumage, state of.
- 7

Date.

PHENOMENA.

JULY.

Temperature.		Winds.	WEATHER AND REMARKS.

AUGUST.

- | | |
|---|--|
| 1 | Species congregating and feeding together — <i>a. incessores</i> — |
| 2 | Partial migrants left breeding haunts. |
| 3 | Summer migrants commence to congregate before departure. |
| 4 | Moult completed — Winter plumage commencing. |
| 5 | Young plumage — state of. |
| 6 | |
| 7 | |

Date.

PHENOMENA.

AUGUST.

b. rasorial — *c.* grallatorial — *d.* natatorial.

Temperature.		Winds.	WEATHER AND REMARKS.

SEPTEMBER.

- 1 Summer migrants congregating.
- 2 Partial migrants, leaving breeding places and congregating else-
- 3 Summer migrants on passage (making autumnal passage).
- 4 Summer migrants departed.
- 5 Breeding plumage gone — state of.
- 6 Maritime species coming regularly inland and departing daily.
- 7 Permanent residents congregating.

Date.

PHENOMENA.

SEPTEMBER.

where.

Temperature.		Winds.	WEATHER AND REMARKS.

OCTOBER.

- 1 Species still congregating.
- 2 Species leaving high grounds for low lands.
- 3 Partial migrants, temporarily visiting on way from breeding
- 4 Species resident have accession to numbers by migration or
- 5 Winter migrants arrived.
- 6 Maritime species coming inland.
- 7 Winter plumage commencing.

Date.

PHENOMENA.

OCTOBER.

haunts.
partial migration.

Temperature.		Winds.	WEATHER AND REMARKS.

NOVEMBER.

- 1 Winter migrants arrived.
- 2 Species resident have accession to their numbers.
- 3 Winter migrants passing.
- 4 Partial migrants — still congregating.
- 5 Maritime species gone inland.
- 6 Winter plumage complete.
- 7

Date.

PHENOMENA.

NOVEMBER.

Temperature.		Winds.	WEATHER AND REMARKS.

DECEMBER.

- | | |
|---|---|
| 1 | Occurrence of rare or occasional visitants from severity of |
| 2 | Species affected by severity of weather — change locality. |
| 3 | Maritime species move to rivers and inland lakes. |
| 4 | Species passing to feeding grounds during evening or night. |
| 5 | |
| 6 | |
| 7 | |

Date.

PHENOMENA.

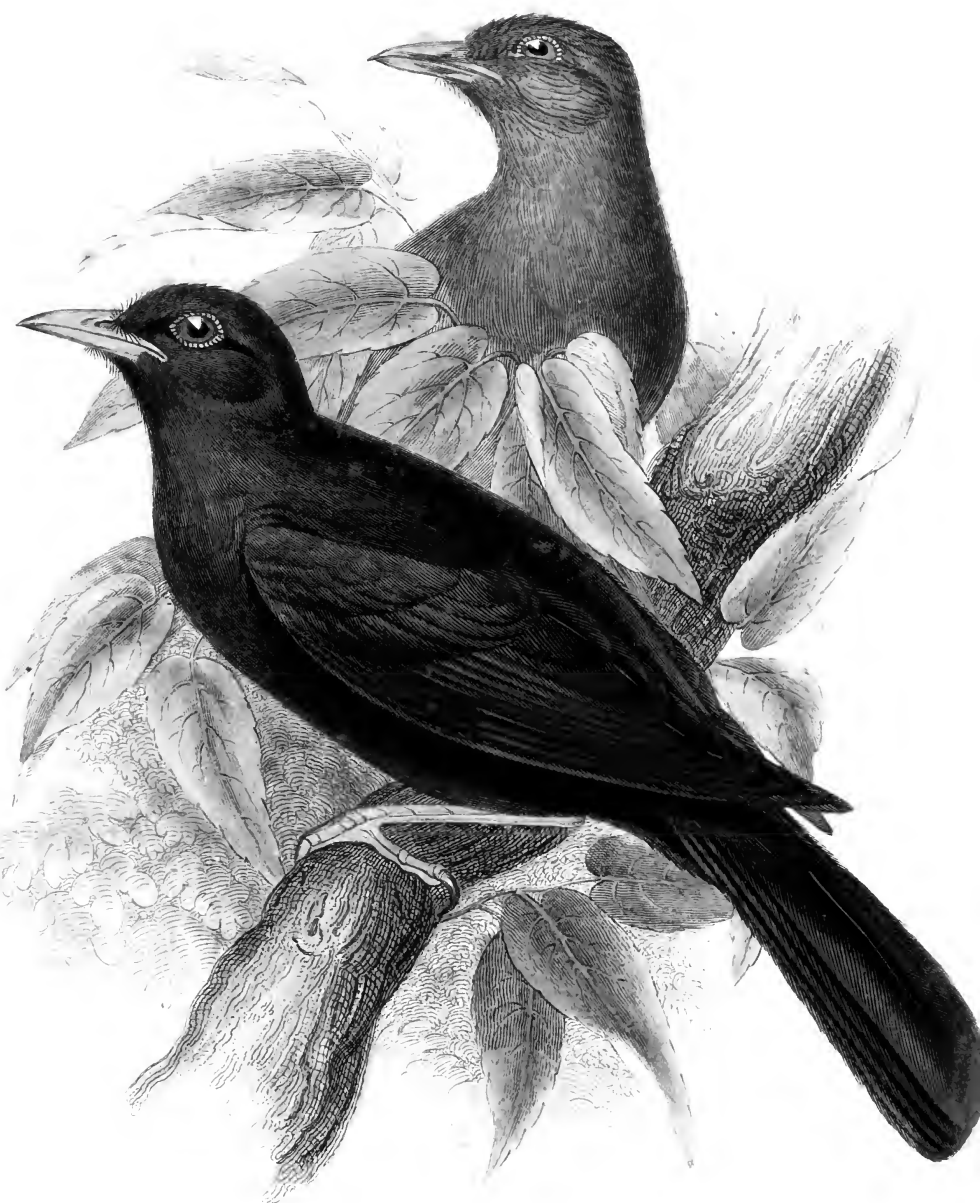
DECEMBER.

season or other causes.

Temperature.	Winds.	WEATHER AND REMARKS.







Turdus anthracinus
No. 100.

ILLUSTRATIONS OF ORNITHOLOGY.

TURDUS XANTHOSCELUS, JARDINE.

Turdus xanthoscelus, *Jard.*, Ann. of Nat. Hist. vol. xx. p. 329, 1847.—
Birds of Tobago.

THREE specimens of this bird were sent to us by Mr. Kirk, from the Island of Tobago, with the following note attached:—"Remarkably shy; a rich mellow note all this month (April) and until July."—We have been unable to find it described or figured, and indeed have not seen it in any collection. The male is from 8. 5̄. to 9. in length; length of the wing to the end of the longest feather, 4. 5̄.* The plumage is of a uniform deep black; the feathers on the vent and under tail-covers tipped with greyish-white; the bills and legs bright yellow. The female is above of a dull olive or oil green; beneath paler and more tinted with ochraceous; the chin indistinctly striated with a deeper shade; the under wing-covers and axillary feathers ochraceous; bill and legs brownish-yellow. A young male has many of the feathers tipped with a triangular spot of yellowish-brown, and according to age, will be thus more or less marked.

* In our measurements the dots over the figures will indicate, *Feet, Inches, Tenths*. Thus, 1. 6. 5̄.—one foot, six inches, five tenths.

CHRYSOPTILUS KIRKII, MALHERBE.

Chrysoptilus kirkii, *Jard.*, Ann. of Nat. Hist. vol. xx. p. 333, 1847.—
Birds of Tobago.

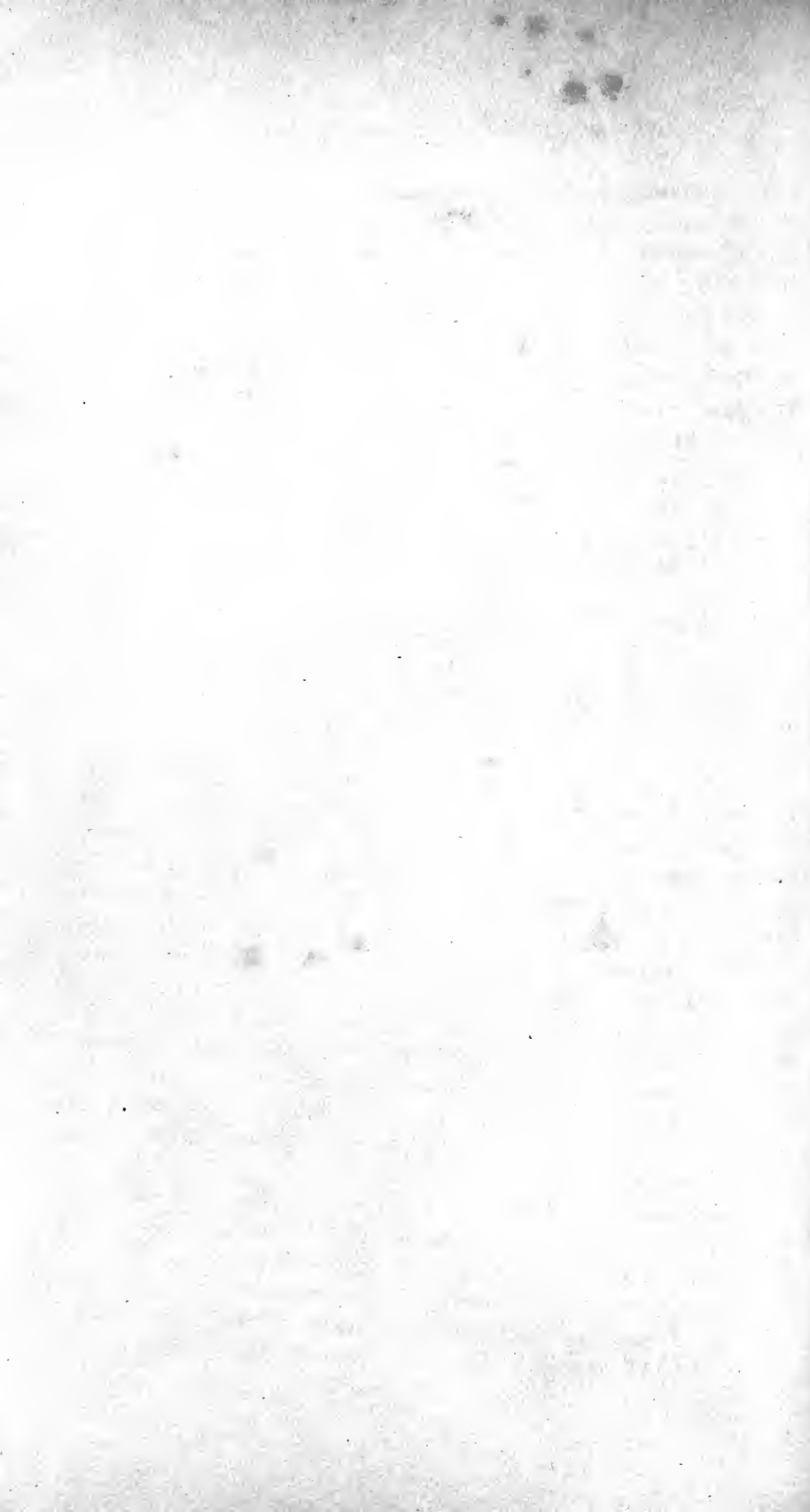
THIS bird was submitted to the examination of M. Malherbe, while in London, collecting materials for a monograph of the genus *Picus*: he considered it undescribed, and suggested the specific name which we have adopted above. The species most nearly allied to this, is the "*Petit pic de St. Domingue*" of Brisson, on which is founded the *Picus passerinus*, Linn.; but it differs from that as well as from the *P. affinis* of Swain., in the markings of the wings and tail, and in the rump and upper tail-covers being red, whereas in the others these parts are olive or yellowish. Sent by Mr. Kirk from Tobago, the only locality from which we have seen specimens. The following note accompanied them:—"Native. The note of this species is three syllables, sounding like the words, 'Click, click, click,' pronounced very sharply towards the end."

In the male, the crown of the head, with the rump and upper tail-covers are bright vermillion or scarlet; the crown, towards the occiput shades into yellow, and the base of the feathers are greyish-black, and appear occasionally through the scarlet. The back, shoulders, and outer webs of the quills and secondaries are bright brownish-yellow, the small feathers on the shoulders having a pale yellow or reddish spot at the tip, and another about the centre of the shaft; the inner webs of the quills and secondaries are umber brown, barred with yellowish-white; the tail is dark umber brown, the outer feathers indistinctly clouded; the cheeks and auriculars yellowish-brown, streaked along the shafts, and barred with yellowish-white; the remaining under parts barred alternately with dark hair brown and yellowish-white, the pale bars being slightly narrower. The bill, legs, and feet, appear to have been blackish-blue. The female is nearly in all respects similar, except in the scarlet part of the head being yellowish-brown, shading into a narrow nuchal collar of dull yellow; the tips of the feathers, in some lights, appear paler.

The entire length, ♂. 2. to ♂. 5.; of wing to end of longest quill, 3. 4. to 6.



Chrysoptilus Kirkii - Macr.
Nov. 1847.



ILLUSTRATIONS OF ORNITHOLOGY.

AT the dispersion last year of Captain W. J. Boys' Ornithological collections, in the sale room of Messrs. Stevens in London, a considerable number of birds were purchased by Mr. Strickland and myself, many of which have proved highly interesting. For the following three descriptions and illustrations of part of that collection, we are indebted to Mr. and Mrs. Strickland. The descriptions will show the interest belonging to some of the species. The illustrations will present the results of the first experiments in Papyrography as applicable to Ornithology.

PERICROCOTUS ERYTHROPYGIUS, JERDON.

Turdus speciosus, var. *B. Lath.*, Gen. Hist., vol. v. p. 97.—Cawnpore Flycatcher, vol. vi. p. 176, pl. 98.*—*Muscicapa erythropygia*, *Jerd.*, Madras Journ. Lit. and Sc., vol. xi. p. 17.—*Pericrocotus erythropygus*, *Blyth*, Journ. As. Soc. Beng., vol. xv. p. 310.—No. 216 of Captain Boys' Collection.

“ Among the valuable zoological collections lately brought to England by Captain W. J. Boys, the result of many years' residence in the upper Gangetic provinces of India, was an extensive series of birds, amounting to between 500 and 600 species, some of them new and many of them rare. The bulk of this collection has been dispersed by auction; but it may be useful to the scientific student to be informed, that a nearly complete set of these birds has passed into the possession of E. Wilson, Esq., and is destined to be added to the magnificent museum now being formed by his public spirited brother at Philadelphia. This collection is the more important, from the specimens being ticketed with numbers, referring to a valuable mass of MSS. notes, made by Captain Boys, the substance of which will, it is hoped, be ultimately added to our zoological literature.

“ The three species which I now propose to illustrate, will serve as samples of the treasures of Captain Boys' collection, and though the species are not new, yet they are very little known, and two of them have never yet been figured. The genus *Pericrocotus*, though somewhat insulated, is undoubtedly a member of the family *Muscicapidae*, and of the sub-family *Muscicapinae*, and is but remotely

connected with *Campephaginæ*, to which it is commonly referred. The structure of the beak, wings, and feet, is entirely that of the *Muscicapinæ*, and the shafts of the dorsal feathers are never thickened as in the *Campephaginæ*.

“ In the male, whole head, chin, hind neck, scapulars, lesser wing-covers, spurious wing, primary-covers, and upper tail-covers, glossy bluish black; secondary covers, and outer half of tertials, white, forming a broad longitudinal stripe on the wing; quills black, paler towards the ends; the fifth and sixth primary, with a basal interior white spot; the three next, and all the secondaries, white at the base, on both webs, for one-third the length; tail black, the five outer pairs of rectrices largely tipped with white; rump vivid orange red; breast pale blood red; belly, vent, and lower wing-covers, white; beak and legs black. Length, 5.5; beak to front, $3\frac{1}{2}$; to gape, 6; height, $1\frac{1}{2}$; breadth, 2; wing, 2.7; medial rectrices, 3; external, 1.8; tarsus, 6; middle toe and claw, $5\frac{1}{2}$; hind ditto, $3\frac{1}{2}$.

“ Mr. Jerdon describes the female as ashy brown where the male is black (except the tail, which is deep black); front whitish, rump, edges, and tips of lateral rectrices, and beneath, white, tinged with ashy on breast.

“ Form slightly aberrant, the beak being rather shorter and more depressed than in others of the genus. The distribution of light and dark colours is similar to that of the other species, but this one is remarkable from the wing spots and tips of rectrices being pure white, instead of being concolorous with the red rump and breast.

“ This species inhabits Cawnpore (Hardwicke); Ghauts near Ajuntch, in South India (Jerdon); Sucktusghur, Chunar (Boys).”



Petrochelidon erythropygus (Seid.)





Muscivora hendersoni Hodge

MUSCICAPA HEMILEUCURA, HODGSON.

Muscicapa hemileucura, *Hodgs.* in Cat. of Mamm. and Birds presented to Brit. Mus., pp. 91, 155; *Id.* ined. Pass., t. cvii. f. 4. — No. 779 of Mr. Hodgson's Collection. — No. 329 of Captain Boys' Collection.

“ THIS is one of the Blue Flycatchers of which Southern Asia is prolific, and which have been referred by Mr. Blyth, in the Journ. As. Soc. Beng., to several new genera (*Cyanoptila*, *Cyornis*, *Stoparola*, *Muscicapula*, &c.) The bird before us is probably referible to *Muscicapula*; but as I am not yet satisfied as to the generic value of these groups, I retain it for the present under *Muscicapa*. Its form closely agrees with *M. atricapilla* of Europe; but the beak is rather more depressed, and the ridge of the culmen more acute. The rictal bristles are short and feeble, not exceeding $\ddot{2}$ in length.

“ The upper surface and sides of the neck and breast deep indigo blue, lighter on front and sides of crown; a streak of pure white over the eye; remiges and rectrices black, margined externally with blue; basal third of four outer pairs of rectrices white; chin, throat, middle of breast, lower wing-covers, abdomen, and vent, white; beak and legs black.

“ Total length, $\dot{4} \ddot{2}$; beak to front $\dot{4}$; to gape, $\dot{5} \frac{1}{2}$; height, $\dot{1}$; breadth, $\dot{2}$; wing, $\dot{2} \ddot{5}$; medial rectrices, $\dot{2} \dot{1}$; external, $\dot{2}$; tarsus, $\dot{6}$; hind toe and claw, $\dot{4}$.

“ Inhabits Nepal (Hodgson); Sucktusghur, Chunar (Boys).”

HETERURA SYLVANA, HODGSON.

Heterura sylvana, *Hodgs.*, in *Proc. Zool. Soc.*, pt. 13, p. 33; *lc. ined. Pass.*, t. cxxiii. f. 1, 2; cxxiv. f. 4. — *Gray*, *Cat. Mamm. and Birds presented to Brit. Mus.*, p. 108. — *Blyth*, in *Journ. As. Soc., Beng.*, vol. xiv. p. 556. — No. 436 of *Hodgson's Collection*. — No. 568 of *Boys' Collection*.

“ Mr. HODGSON has been misled by the lengthened tertials and the striated plumage, into placing this bird, at present a unique species, among the Larks, in which arrangement Mr. Blyth follows him. Mr. Gray seems to me equally wide of the truth in placing this bird among the *Emberizineæ*. It appears to be a nearly typical genus of the *Malurineæ*, and consequently belongs to the *Dentirostres*, not the *Conirostres*. The flattened forehead, the compressed emarginate beak, the wiry plumage of the head, the narrow and worn rectrices, the strong feet, lengthened toes, and curved claws, as well as the striated coloration, are precisely what we find in the *Malurineæ* genera, *Megalurus*, *Cinclorhamphus*, *Sphenura*, *Sphenæacus*, *Malacocercus*, *Prinia*, &c.; the arched and indurated membrane which overhangs the nostril is repeated in *Sphenæacus*, *Sphenura*, *Malacocercus*, and *Prinia*, and the pointed and lengthened tertials occur in *Megalurus* and *Cinclorhamphus*. The only generic peculiarity of this bird seems to be, that the first four primaries are of equal length, while in the *Malurineæ*, generally, the wing is much rounded by the graduation of the two first quills.”

“ Whole upper parts pale rufous brown, with a broad longitudinal streak of deep fuscous down the middle of each feather; brow-streak and chin whitish, ear-covers brown; a row of small fuscous streaks, forming a broken line along each side of the chin; lower parts very pale rufous brown, with a medial fuscous streak on each feather; these streaks are linear on the middle of the breast and abdomen, and become rather broader at the sides. Remiges and rectrices fuscous, edged with pale rufescent; the outer pair of rectrices largely, the next slightly, tipped obliquely with dirty white. Upper mandible fuscous, lower and legs pale yellowish.”

“ Length, 6. 3̄; beak to front, 5̄; to gape, 7̄; height, 2̄; breadth, 2̄; wing, 2. 9̄; medial rectrices, 2. 7̄; external, 2. 6̄; tarsus, 9̄; middle toe and claw, 8̄; hind ditto, 7̄.”

“ Inhabits central region of Nepal (*Hodgson*); Kumaon (*Boys*).”



Heterurus sylvanus, Hodgs.

June 1848.





Scops cristata. (Daud.) var.
.1848.

ILLUSTRATIONS OF ORNITHOLOGY.

WE are again indebted to Mr. and Mrs. H. E. Strickland and Papyrography, for the following Illustrations and Descriptions:—

SCOPS CRISTATA, DAUDIN. VAR.

Chouette à aigrette blanche, *Levaill.*, Ois. Af. pl. 43.—*Strix cristata*, *Daud.*, Tr. Orn. v. ii p. 207.—Lath. Ind. Orn. Sup. p. 15.—*Lophostrix cristata*, *Gray*, List. Brit. Mus. p. 47.—*Ephialtes cristatus*, *Gray*, Gen. Birds, sp. 17.—*Strix superciliosa*, *Shaw*, Zool. v. vii. p. 250 (exc. syn.).—*Syrnium griseatum*, *Less.*, Traité Orn. p. 113.—*Lophostrix griseata*, *Less.*

THE specimen here figured was obligingly presented to me by L. L. Dillwyn, Esq. of Swansea. A ticket attached to the bird gives Coban as its habitat. This bird is identical in form and structure with specimens of *Scops cristata* (*Lophostrix griseata*) in the British Museum, from Cayenne, and I do not therefore venture to separate it specifically, though it presents considerable diversity in its coloration. The Cayenne specimens have more white on the forehead than the present bird, the rufous on the cheeks extends over the whole of the ear-covers, and the secondaries, as well as the primaries, are marked with pale fulvous bars.

I follow Mr. G. R. Gray in uniting *Lophostrix* to *Scops*, from which it seems to differ only in size. Mr. Gray, however, adopts for this united genus the later name *Ephialtes* in place of *Scops*, because the name *Scops* was originally given by Mœhring, in 1752, to the Numidian Crane. After a mature consideration of this question, which I discussed in 1842 (*Ann. Nat. Hist.* vol. viii. p. 368), I am still of opinion, that Mœhring's generic names should not be adopted. The binomial system of nomenclature was first introduced by Linnaeus in the tenth edition of the *Systema Naturæ*, published in 1758, and that year ought consequently to be taken as the *datum line* beyond which no claim for priority of nomenclature can be entertained. It follows, that if we reject the name of *Scops* in the Mœhringian sense, on the ground of its having been proposed previously to 1752, we must retain the term *Scops*, as proposed by Savigny, in 1809, for the genus of Owls before us.

ILLUSTRATIONS OF ORNITHOLOGY.

Crown uniform sepia brown; superciliary streak and anterior feathers of the temporal tufts white, the medial feathers of these tufts are pale fulvous on their inner, and speckled brown and fulvous on their outer webs; the posterior ones are nearly uniform brown. Round the eye is a narrow ring of black feathers, and beneath it a patch of rufous, blending into the deep fuscous of the auricular regions. The bristly feathers of the lores and chin are white at their base and black at their ends; they project one fourth of an inch beyond the tip of the beak. Back, scapulars, tertials, and wing-covers, deep fulvous, densely and minutely speckled with fuscous. The external row of scapulars have a large, rounded, subterminal white spot, and three or four fulvous bars on their outer webs. There is a similar round white spot on the outer webs of five or six of the medial wing-covers. All the remiges fuscous, margined externally with rufous brown, and furnished with three or four broad sub-basal bars of pale fulvous on their inner webs. The third, fourth, and fifth primaries, have each three sub-basal fulvous spots on the outer webs. Lower wing-covers fulvous, barred with fuscous. Under parts pale fulvous, densely speckled with fuscous. The feathers of the throat have an indistinct medial brown streak on each. The breast is considerably darker and more thickly speckled than the rest. On the belly the speckling assumes an indistinctly barred or zigzag appearance. Tarsi feathered to the base of the toes, fulvous, with remote zigzag brown bars. Under tail-covers very pale fulvous, with very remote pale brown bars. Medial rectrices and outer webs of the lateral ones rufous, speckled with fuscous; inner webs of the latter fuscous, with eight or nine broad bars of pale fulvous, confluent at the margin of the feather.

Beak and toes yellowish; claws black. Primaries 2—6 considerably emarginate on the distal half of their outer webs, and primaries 1—5 similarly emarginate on the inner webs. Orifice of ear small (about 5 in diameter).

Total length, 14; beak to front, i. 2; to gape, i. 3; wing, 11. 5; medial rectrices, 7. 5; external, 7. 2; tarsus, 2; middle toe and claw, i. 5.





Tityra surinama. (Linn.)

ILLUSTRATIONS OF ORNITHOLOGY.

TITYRA SURINAMA, LINNÆUS.

SYN.—*Muscicapa surinama*, Linn. Syst. Nat. p. 325.—Lath. Gen. Hist. v. vi. p. 248.

THIS elegant species of *Tityra* agrees sufficiently well with the short description given by Linnæus of his *Muscicapa surinama*, to justify us in regarding them as identical, at least till the contrary can be proved. The only discrepancy is in the white markings of the scapulars, which are not mentioned by Linnæus; but these are so much overhung and concealed by the black feathers of the upper back, that they might easily escape notice. The particular habitat of the specimen before us is unknown; but it may very probably be from Surinam, a part of South America, whose zoology is much less known than that of the Brazilian territories further south. We are indebted to L. L. Dillwyn, Esq., Swansea, for the use of the specimen figured.

Crown, lores, ear-covers, and whole upper parts glossy blue black; inner margins of scapulars and basal half of dorsal feathers snow white, forming a partially concealed white spot; two outer pair of rectrices narrowly tipped with white. Whole lower parts pure white; beak cinereous; margins of lower mandible whitish; feet cinereous.

Feathers of front and crown somewhat lengthened, and curled downwards at their tips, forming a slight crest. Second primary pointed and suddenly emarginated near the tip, and ♂ shorter than the first; it is also remarkable for a medial longitudinal streak of white on the inner web, which is wanting on all the other remiges.

Total length, ♂. 5; beak to front, 5; to gape, 7; breadth, 3; height, 2; wing, 3. 3; medial rectrices, 2. 3; external, 2; tarsus, 7.

TIMALIA LEUCOTIS, STRICKLAND.

A TYPICAL *Timalia*, closely allied to *T. nigricollis*, Temm. Pl. Col. 594, fig. 2, and to *T. pectoralis*, Blyth, Journ. As. Soc. Beng. v. xi. p. 783, but distinguished (*inter alia*) by the long superciliary streak, and by the white patch immediately behind the ear orifice. Received from Malacca.

Crown olivaceo-fuscous, passing into olive on the upper back, and into deep rufous on the rump, wings, and upper tail-covers. Feathers of the lores whitish with dark shafts. A pure white superciliary streak, margined on both sides with black, commences above the eye, and passes down the side of the neck, where are also some detached white spots (which, however, may be owing to misplacement of the skin beneath). Sides of the head very dark grey; auricular feather margined below by an elongate white spot. Wing-covers rufo-fuscous, all of them tipped with pale rufous. Remiges rufous externally, fuscous within; and all narrowly tipped with pale rufous. Rectrices rufo-fuscous, darkest towards the ends, and narrowly tipped with rufous. Chin and throat black; breast and upper belly dark cinereous; lower belly, vent, and under tail-covers, rufous. Upper mandible fuscous, lower, whitish; feet, pale brown.

Total length, 5. 8; beak to front, 6½; to gape, 7; height, 3; breadth, 2; wing, 2. 5; medial rectrices, 2. 4; external, 2; tarsus, 9; middle toe and claw, 8; hind ditto, 6.



J. M. S.

Timalia leucotis Steud.

1848.



NOTES ON THE STRUCTURE OF BIRDS.

ORTALIDA RUFICAUDA, JARDINE.

MANY forms of the *Cravidae*, with others allied to them, present remarkable conformations in the structure of the trachea. That of a duplicature upon the breast, just within the skin, occurs in several of them, as well as in some aquatic birds, some of the waders, and in a few incessorial birds. It is a structure of which we do not perceive the use or intention, and one which would apparently expose a very important organ more readily to injury. Most of the species of *Penelope* and *Ortalida* possess a very loud and shrill voice, often harsh and discordant, and which at times they utter incessantly; some of the notes have a deep or internal sound, as if produced from within, and several have the power of modifying their tones, and of making them appear as if uttered at various distances; a power however which is possessed even in a greater degree by many species that have no winding or analogous structure of the trachea.

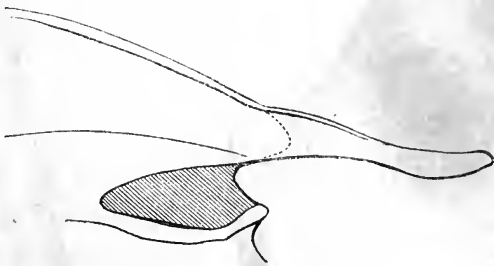
In the species before us, for which we are indebted to our Tobago correspondent Mr. Kirk, and which we have ventured elsewhere to characterize as undescribed, a comparison of the structure with that of the trachea of the *Parraka* described and represented by Dr. Latham, and with M. Temminck's plate of the same organ, from his *Penelope Parrakoua*, presents some differences. In both these the trachea is seen with the sternal keel in the centre, the duplicature running down the one side and up the other. In the *Parraka*

NOTES ON THE STRUCTURE OF BIRDS.

the duplicature does not descend so far, “ descending on the breast more than half way before it makes a turn upwards.” It may be observed, that in both these birds (the marail and parraka) the descent is on the left side, the ascent on the right.

In *Ortalida ruficauda*, the trachea, after leaving the furcatorial opening, turns down the breast on the left* side of the sternal keel, runs for its whole length, takes a simple turn at the extremity, and returning parallel with and on the left of the descending branch, follows the œsophagus in its usual course. The duplicature of the trachea is felt from the outside, and on putting aside the feathers, its track can be easily traced. On removing the skin, it is seen covered with a transparent sheath, and in its passage it indents or grooves the muscle of the breast. At the furcatorial opening it is bound over by two muscles, arising from the centre of the os furcatorius, and joining over the trachea with a strong fascia, where there are also transverse fibres. These muscles are seen in our plate, dissected off from each side. At the lower end, where the duplicature takes place, it is bound down by a strong fascia attached to the curve, and giving rise to a muscular stripe, which is inserted into the extremity of the cartilaginous end of the sternum, and keeps the tracheal curve in its place, preventing it from slipping forward. This cartilaginous end, or termination, is much elongated, and serves as an admirable yielding stay.

* The bird is supposed to be placed upon its back, with the head from the observer.



Cartilaginous End of Sternum.



Albatrus phoebastria

TIMALIA LEUCOTIS, STRICKLAND.

A TYPICAL *Timalia*, closely allied to *T. nigricollis*, Temm. Pl. Col. 594, fig. 2, and to *T. pectoralis*, Blyth, Journ. As. Soc. Beng. v. xi. p. 783, but distinguished (*inter alia*) by the long superciliary streak, and by the white patch immediately behind the ear orifice. Received from Malacca.

Crown olivaceo-fuscous, passing into olive on the upper back, and into deep rufous on the rump, wings, and upper tail-covers. Feathers of the lores whitish with dark shafts. A pure white superciliary streak, margined on both sides with black, commences above the eye, and passes down the side of the neck, where are also some detached white spots (which, however, may be owing to misplacement of the skin beneath). Sides of the head very dark grey; auricular feather margined below by an elongate white spot. Wing-covers rufo-fuscous, all of them tipped with pale rufous. Remiges rufous externally, fuscous within; and all narrowly tipped with pale rufous. Rectrices rufo-fuscous, darkest towards the ends, and narrowly tipped with rufous. Chin and throat black; breast and upper belly dark cinereous; lower belly, vent, and under tail-covers, rufous. Upper mandible fuscous, lower, whitish; feet, pale brown.

Total length, 5. 8; beak to front, 6½; to gape, 7; height, 3; breadth, 2; wing, 2. 5; medial rectrices, 2. 4; external, 2; tarsus, 9; middle toe and claw, 8; hind ditto, 6.





Timalia leucotis Strick.

1868.

PENELOPE CRISTATA.

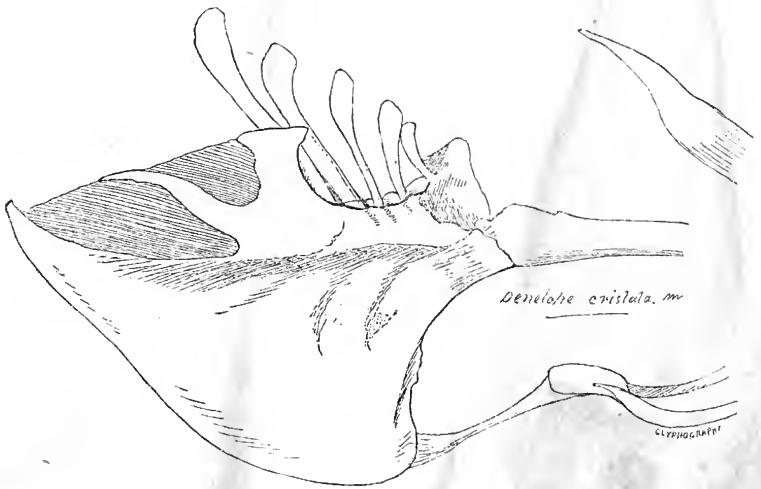
IN order to compare the structure of some of the Rasorial Birds with that of the Australian *Menura*, we give a figure and some notes to illustrate parts of the intestinal canal of a form belonging to the first, which we consider aberrant. This will be useful to compare with the structure of the more typical species, but especially interesting to contrast with that of a bird nearly equal in size, the habits of which are very little known, but which, looking at its size and shape, plumage, and colonial name, was considered, until very lately at least, as being closely allied to the Gallinaceous Order.

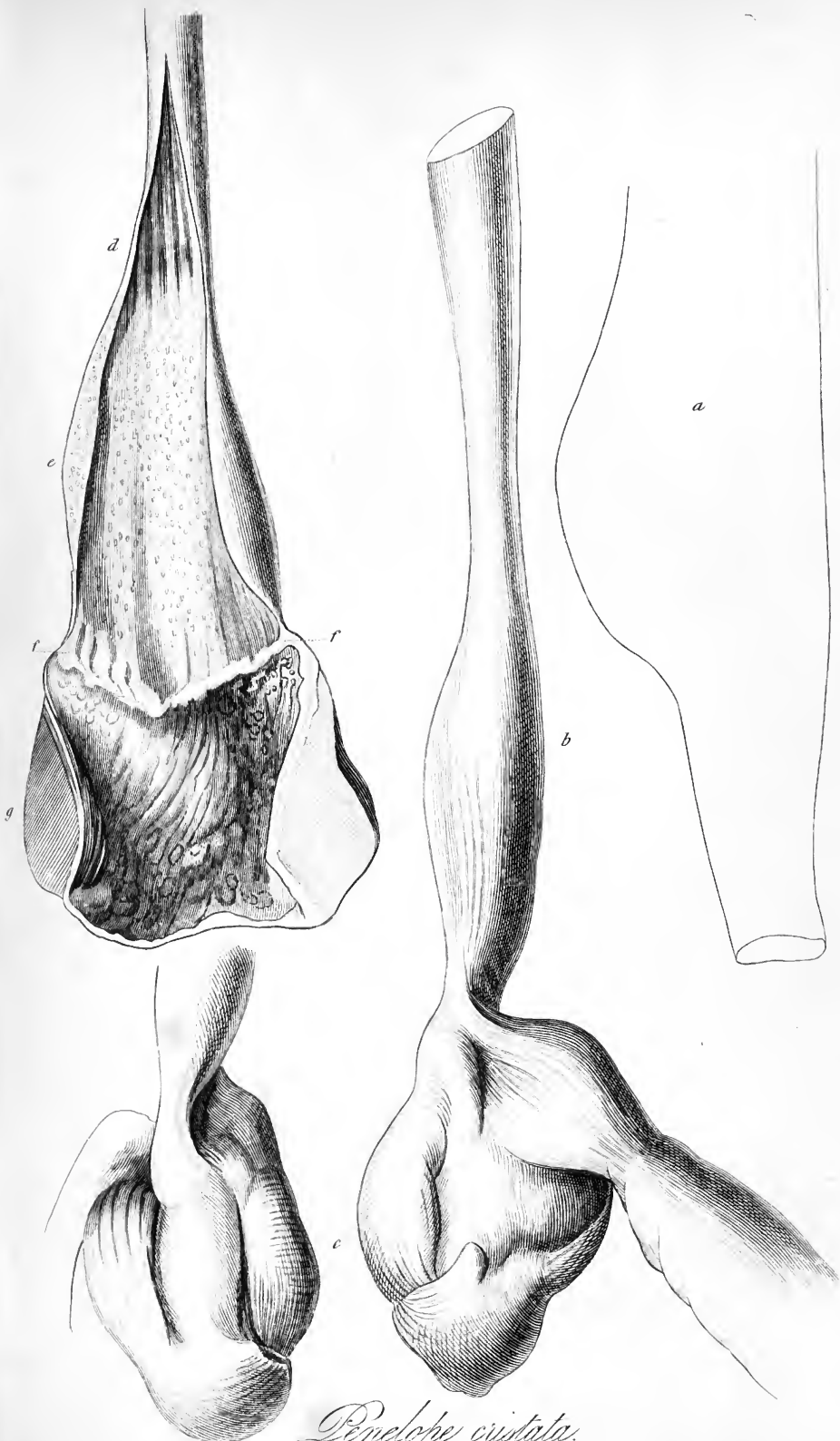
In the intestinal canal of *Penelope cristata*, the œsophagus is very wide and membranous: before entering the body of the bird it exhibits a slight dilatation analogous to a crop *a*, after which it contracts previous to forming the second glandular stomach *b*, whence it opens into a small gizzard or true stomach *c*. The walls of the wide œsophagus and almost membranous crop begin to thicken at the entrance of the glandular stomach, and presents at this part strong plicæ or folds *d*. The walls of the glandular stomach *e*, are of more than usual thickness, and seem composed of a series of glands in its substance, which open interiorly by numerous oval points. The true gizzard is in all its parts small when compared with the size of the bird, or with the typical Rasoires; at the same time, it exhibits a very powerful development in its muscular and internal arrangements. Interiorly it enters from the glandular stomach, by a prominent coriaceous constriction *f*, and the inner surface is thickly studded with points and rounded elevations of the same structure, feeling to the touch rough and hard, and the inner lining is distributed in rounded ridges, which will work upon or against each other like rollers, and will act with great power. The muscles exterior to, or working these *g*, are of considerable strength and thickness.

The canal terminates in a wide cloaca. At about $\frac{3}{5}$ from the extremity, it contracts rather suddenly to less than half its width, giving off at this point two cæca of nearly equal length, but very narrow in diameter, and dilating slightly at the tip, where the main

NOTES ON THE STRUCTURE OF BIRDS.

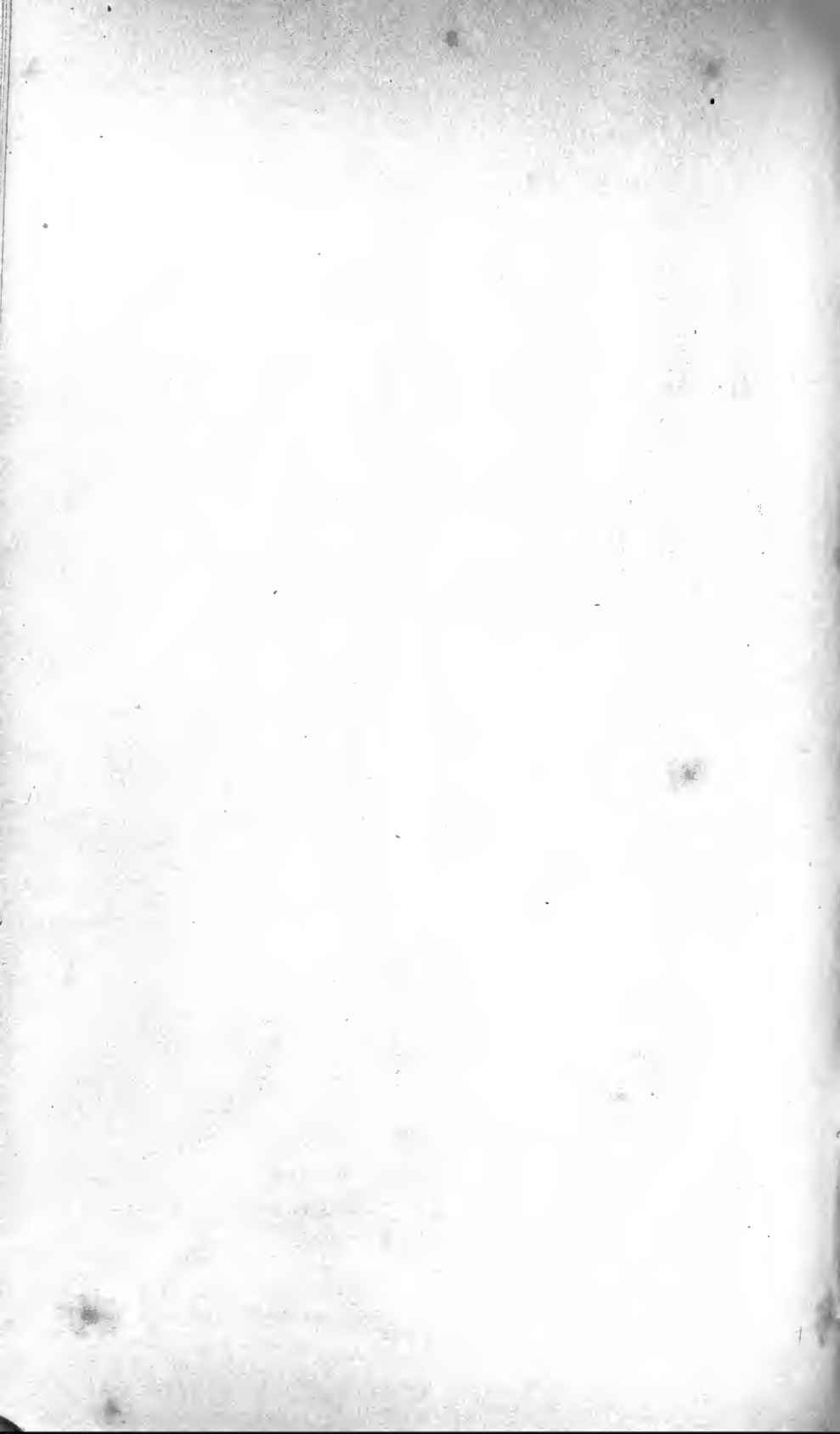
intestine again begins to widen. It will be hereafter represented. The accompanying figure of the sternum is reduced, the greatest length in the skeleton being 3. 7.





Penelope cristata.

1848



CONTRIBUTIONS

TO

O R N I T H O L O G Y

FOR

1849.

BY

SIR WILLIAM JARDINE, BART.

F. R. S. E., F. L. S., ETC., ETC.

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NOTES

ON

THE HABITS OF SOME BIRDS, COLLECTED ON THE COAST

OF

WESTERN AFRICA.

BY

C. A. GORDON, M. D.,

Surgeon, 57th Regiment.

FROM the dangerous nature of the climate of Western Africa, and the little knowledge we have of the country or its productions beyond a few miles inland, the ornithology of that portion of the continent has hitherto possessed much interest. A few years since, collections of considerable extent, both in numbers and species, were brought to this country from the "Coast," and their examination formed the basis of Mr. Swainson's two volumes of "Birds of Western Africa." The unfortunate "Expedition to the Niger" brought a small collection of birds on its return, a few of which were described by Mr. Fraser and Mr. Strickland, in the proceedings of the Zoological Society;* and one or two were figured by myself

* In the Appendix to the "Expedition to the Niger," published in 1848, all the species, amounting to forty-five in number, are described.

and Mr. Selby in our "Illustrations of Ornithology." Last year, by the attention of Maxwell Hyslop, Esq., the exertions of the officers in charge of the Liverpool Palm Oil Ships, procured for us a few specimens from the Old Calabar river; some of which proved new, and were described in the "Annals of Natural History:" and these are all the sources of information, which of late years have occurred to us in respect to the ornithology of this interesting region. A few weeks since, Dr. Gordon, 57th Regiment, permitted us to examine, and kindly presented to us, a part of a collection made by himself during his medical attendance upon his regiment on service at Accra and Cape Coast Castle. One or two birds appeared to differ from any we had before seen from the same districts; and on requesting to be informed of the particulars of their capture, &c., Dr. Gordon was so kind as to forward his notes made upon the spot, and to accede to our desire to publish a selection from them; and we would direct attention to them, as well for their value in adding to the history of species very seldom accessible in their native country, as an example of what we pointed out in our "Hints for Preparing and Transmitting Ornithological Specimens from Foreign Countries,"* of how much could be done by many of our officers, or other gentlemen, though employed in active service.

The character of the ornithology of the west coast, on both sides of the line, is either peculiar, or partakes more of that of Northern and North-eastern Africa than of the south. Several of the species met with by Rüppell on the north and north-east—such as *Scotor-nis climaturus*, in Sennaar; *Cypselus ambrosaicus*, in Egypt and Nubia; *Hirundo senegalensis*, &c., Abyssinia; *Malaconotus chrysogaster*, common in Abyssinia; *Ploceus larvatus*, *Euplectes flammiceps*, *Emberiza septemstriata*, in Abyssinia; *Pyrgita simplex*, common in Kordofan, Sennaar, and Abyssinia, &c., with many others, are found also far to the south of the line, and must have a very extensive range; at the same time, a great many of the species found along the western coast are migratory, but information is still wanting to determine their zones or geographical range; and the shorter-winged birds, as the species of *Drymoica*, and many of the *Sylviadæ*; the former, very numerous,

* Contributions to Ornithology for 1848.

seem to be more local, and though migratory, do not take the extensive range the others do.

The greater portion of the birds to be noticed were procured near Accra, and within a circle of six miles round Cape Coast Castle. Dr. Gordon observes regarding these districts—"The country surrounding Accra is for several miles in every direction open, flat and dry, the greater part covered with rank reedy grass, with occasional patches of low brushwood; a comparatively small portion is under cultivation. At a distance of about six miles to the westward of the town, there is a river of considerable size, and in the immediate vicinity there is a salt water lake, which covers probably ten or twelve square acres, and is the resort of myriads of aquatic birds."

"The country around Cape Coast Castle is undulating, and as it were, dotted over with numbers of coarse granitic hills, of 150 to 200 feet in height, which, with the intervening valleys, are covered with low brushwood, of so dense a nature, as to be in most parts impenetrable to man. A few occasional patches have been cleared for agricultural purposes, but even these (so very rapid is vegetation) would in the course of a couple of seasons, run into their original wild state, were the young bushes, as they grow up, not frequently burnt or cut down."

"*Hirundo senegalensis*—(34*)—Shot, Cape Coast Castle, 5th July. The species is rare in this vicinity; one couple have been observed about the fort during the last month, and a party of six or eight has been occasionally seen in the vicinity during the same period. The two which hovered about the fort, and which appeared to have a nest somewhere about the ramparts, were usually seen during the mornings, before the sun attained its great heat, and in the cool of the evening; but the specimen now before me, was shot in the middle of the day, the sky being at the time rather cloudy, and the temperature as low as 76°. The legs are only covered to the knee, and the narrow black stripe along the edge of the lower

* These numbers refer to the numbers attached to the specimens, and correspond with Dr. Gordon's notes.

mandible, as mentioned by Swainson, is not apparent. In the gizzard was a quantity of the soft remains of insects, as well as the hard parts of tolerably entire small coleoptera. Its flight is rapid; and it has the same capability of turning abruptly which characterizes the entire genus. While flying, either after insects, or two playing together, they keep constantly uttering a very soft and peculiar note, which, though by no means loud, is nevertheless audible at a considerable distance, and serves immediately to detect this species among the crowds of swallows which fill the air during the cool parts of the day. It is most difficult to describe its note, but it may be likened to the word 'chu,' pronounced in a soprano-guttural and half-whistling manner. I may remark, that I have never seen this bird except while on the wing, and that it often takes long flights in a circular direction, so that by waiting when it is first seen, a person is pretty certain to have a shot at it as it circles round and round in the same line; the circles which it forms including perhaps upwards of a square mile."

————— (39) — "Shot at Cape Coast Castle, 9th July. It was flying over on an open piece of meadow, covered with grass and reeds, in the vicinity of the salt lake. The species does not appear common in this vicinity."

This is *Hirundo (cecropis) melanocrissus*, Rüpp. It was found by Rüppell during summer (July to October) upon the table lands of Dembea, and in the valleys of Sennaar. They had their nests upon the precipices, and in their habits agreed with the European *H. rustica*. The young birds have a delicate brown streak along the shafts of the breast feathers.—*Rüpp. Vög. N. O. Afrika*.

————— (21) — "A flock was seen on the ground, but they rose before I could get within gunshot; a couple kept flying about, apparently in pursuit of insects, when the specimen was shot ♂. Two have a nest in the walls of the castle, but the species does not appear frequent in this vicinity."

This is *H. (cecropis) striolata*, Rüpp.—Rüppell states, that he saw this swallow abundant in the meadows of the Abyssinian province of Barakit in the month of May, and near Gondar in November.—*Vög. N. O. Afrika*.

————— (53) — “ Shot 12th August. They abound on this part of the coast.”

This is *Cypselus ambrosaicus*, Temm. *C. parvus*, Lichten.

————— (35) — “ ♂ shot in Cape Coast Castle, 5th July. This is the most common of the swallows of this part of the coast, the recesses of the ramparts being crowded with their nests, and during the cool of the mornings and evenings, myriads of them soar in the air in pursuit of insects, at one time so high as to be out of gunshot, and on another occasion so low as almost to touch the ground. There was one remarkable peculiarity observable in this species, in the enormously developed sublingual glands, they being so large as completely to fill up the space between the rami of the lower mandible. They had a minutely granulated appearance, as if a quantity of millet seed were adhered together. The layer of subcutaneous fat was enormously developed, reminding one of the Gull genus in this respect, for the same liquid adipose tissue soiled the feathers very considerably notwithstanding the greatest care in skinning it.”

This is *Cypselus affinis*. — The occurrence of this bird on the west coast of Africa is exceedingly remarkable, if we are correct in its identity with the species of India. We have compared Dr. Gordon's specimen with a series from various parts of India, and cannot satisfy ourselves as to any distinction either in colour or size; and being so abundant, as described in the above notes, prevents our considering it as a temporary or stray visitant. In India, *C. affinis* is a common though sometimes local species; and according to Blyth, is resident throughout the year. It builds, according to Jerdon, in large pagodas, large old choultries, and other similar buildings; the nests are often thickly crowded together. Captain Tickell remarks, the salivary glands furnish a supply of glutinous substance, used in cementing the materials of the nest.*

“ *Scotornis climaturus*, Sw. — (62) — Shot at Cape Coast Castle, 20th September. This beautiful species appeared just to have returned to this part of the country after its migration, which

* Blyth, Plan of an Indian Ornithology, *Cypselidae*, p. 5.

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took place after the commencement of the rainy season; when shot, its gizzard contained the remains of apparently large insects, and one very entire part of a beetle. One of the most characteristic marks of the bird, is the elegant white gorget on the breast; the rami of which, commencing at the angle of the lower jaw, become gradually broader and join in the centre, at which part it projects to a point anteriorly, so as, at first sight, to appear almost as a triangular spot. The nostrils project in a very peculiar manner, appearing like small tubercles on the bill."

"*Halcyon cyanotis*—(26.50)—Both shot at Cape Coast Castle in June and July. The latter at a salt pond. In this specimen there was a small spot of white, immediately behind the auriculars, at the point where the rufous collar commences to extend from the sides. When shot, it was perched on a small low bush; and like the other members of the family, it did not appear timid. The stomach contained the remains of small fish.

"*Ispida bicincta*—(51)—A male, shot on the salt pond, Cape Coast Castle, July 19. It was first seen playing with two or three others over the water; after a short time they separated, and this one dived, apparently after its prey, and was shot as it rose. I may remark, that I have also seen the *Halcyon cyanotis* dive in this way. It always makes its dart from the branch of some of the small bushes which grow close to the water, and then returns to the place where it had previously been perched, there to await the approach of the minute fish upon which it feeds."

"*Nectarinia splendida*—(61)—This bird was presented to me in a fresh state by a native. Its food was found to consist of ants and other small insects, which these birds no doubt find in the flowers, the nectar of which they have so long been thought only to sip."

————— (16.59)—♂, shot 11th June, 1847, while perched upon a low bush in one of the open spaces between the low hills that abound in the vicinity of Cape Coast Castle. When shot it was in the act of singing; its note was most melodious and beautiful, more approaching those of our English songsters than any thing I have hitherto heard on the coast. It is to

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be remarked, however, that this bird had not a prolonged song like those of Britain, but it consisted of a few soft and melodious notes, which it keeps repeating over and over, sometimes for a considerable period together. This is the first specimen of the bird that I have seen, being very shy; but about sunset, its note may be heard among the jungle in every direction, as we walk along the narrow paths in the vicinity. In the fresh state, the iris was of a bright orange colour; the feet and bill leaden blue—with the exception of the upper mandible, along the whole length of which a black stripe extended; the front of the head is chesnut-brown; between the eye and nostril, on each side, is a triangular spot of white, the base of which is posteriorly, the apex directed forward; the auricular feathers are somewhat bristly—the centre rib being white, the rest light rufous; from the gape, a narrow white (pale) stripe extends backwards to behind the ear; a blackish streak runs along the inferior edge of the lower jaw; the chin white. All these various colours become imperceptibly blended posteriorly with the greyish-brown, various shades of which pervade the plumage of this very modestly coloured bird. The feathers of the rump are prolonged to a remarkable degree, and having been erected to some extent when the bird was shot, gave it a very peculiar appearance. The gizzard contained remains of insects, and a large spider in a tolerably entire state. The Fantee name is “Apetapru.”

The bird above described appears to be the *Drymoica mentalis*, Frazer, procured at Accra, and described in the proceedings of the Zoological Society for 1843. That description appears to have been taken from an imperfect specimen, the dimensions not being fully given, so that Dr. Gordon's account of its habits, and the accompanying figure, in our “Illustrations,” may not be unacceptable to Ornithologists.

“*Budytes* --(71)—Shot at Cape Coast, 6th November. The wagtails, which were seen in considerable numbers in this vicinity during the dry season, disappeared on the setting in of the rains, and did not return until early this month, when after some rain had fallen, a few of these birds were observed about the roads, and often in pairs.”

This is either the *B. flava* or *flaveola*, but from the immature state of the specimens, it is difficult to determine.

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“ *Petrocincla albicapilla*—(2)—Had the stomach filled with sand and the remains of fruits.”

“ *Platysteira lobata*—(45)—Specimen mutilated ♀, but corresponding with Birds of Western Africa. The wattles in the fresh specimen are bright red (scarlet.)”

“ ————— (30)—♂, shot while perched on a tall bush, in a field of ground nuts, near Cape Coast Castle. This shrike is exceedingly uncommon in this vicinity, having only seen two or three specimens. They are so shy as to render it almost impossible to approach within gunshot. The markings of the bird give it a very elegant appearance when flying; the white on the scapulars, and on the proximal half of the primary quills and rump, elegantly contrasting with the clear black of the fore-part of the back, neck, and head.”

The nearest description we can find of this species is that of *Collurio (Lanius) smithii*, of Fraser (Proceed. Zool. Soc. for 1843, p. 16), which agrees with it exactly in characters and size, except that no mention is made of the white rump conspicuous in our specimen. Mr. Fraser's bird was also procured at Cape Coast.

“ *Malaconotus barbarus*—(31)—Shot at Cape Coast Castle, 2d July, on a low shrub in a cultivated field. It is one of the handsomest birds found in this vicinity. It seldom leaves the dense ‘bush,’ and is rarely to be seen for more than an instant as it darts across the narrow paths through it. It is very timid, flying into the densest part of the forest on the approach of any person, and never showing itself a second time in the same place when once disturbed.”

“ *Malaconotus chrysogaster*, Sw.—(68)—Shot near Cape Coast Castle, 18th October. It appears to be a rare bird on this part of the ‘Coast,’ having never seen a specimen except the present one. It was shot in the dense bush on the top of a somewhat tall tree. The feet are of a pale blue slate colour.”

“ *Corvus leuconotus*, Sw.—(75)—Shot at Cape Coast Castle, 20th November. This bird is so remarkably wary in this vicinity,

that it is almost impossible to get a shot at it. But at Accra, where they occur in very great numbers, and are probably but little annoyed, they are tolerably tame. They are generally seen perched on a tall tree in the distance, or flying across the impenetrable jungle. The note, although resembling that of the English rook, is yet different, being a deeper hoarse scream."

"*Ploceus texor*—(13)—Shot at Cape Coast Castle, 5th June, 1847, while perched on a bombax tree, from the boughs of which hung several scores of bottle nests. Irides of a bright orange red. A similar species, which is very common in India during the grain season, is occasionally taught tricks by the natives, such as loading and firing a small cannon, &c. I have myself witnessed a most extraordinary arrangement in the nest of this bird; on one side of the interior, a piece of clay may be seen adherent to the nest, into this the bird, during the season of incubation, places a glow-worm or fire-fly during the night."

"*Euplectus ignicolor*—(6.17)—Fantee name *Akhim butukra*.—Cape Coast Castle, 2d June, 1847. Have made their appearance since the commencement of the rainy season. Are seen in great abundance in this vicinity, in small flocks of males and females. Note, a short sharp chirp."

"*Euplectes flammiceps*—(15)—Cape Coast Castle, 1st June, 1847. (Dr. Gordon criticises the figure in the 'Birds of Western Africa,' as scarcely doing justice to the elegant and graceful form of this bird.) They are very familiar, and hop from branch to branch, within a few yards of the person who visits their retreats."

"*Spermophaga cyanorhynchus*, Sw.—(69)—Shot 18th October. Birds of this species seem to have only lately made their appearance in this vicinity, that is, within the last few weeks, during which time the various species of *ploceus*, but especially the red and black-headed, have been gradually disappearing, and now there are but a few to be seen about the old Indian corn fields."

"*Crithagra chrysopogon* ♀—(29)—Shot 30th June, at Cape

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Coast Castle; and as it is the only specimen of the bird I have hitherto met, I am inclined to consider it rare in this vicinity."

"*Pyrgita simplex* — (12.36) — Cape Coast Castle, 7th July, 1847, very common. The only external character which appears to distinguish the male of this bird from the female, is, that upon the outer part of the lesser wing-covers of the former, there are two or three feathers tipped with white, so that when resting on the ground, a small white spot is apparent upon each shoulder. In the female there is no such spot. Sparrows would appear to be much less impertinent on this coast than they are proverbial for being in all other parts. They do occur in the streets, although not in any great abundance, nor do they allow the near approach of persons. It is in the lanes, about the outskirts of the town, that they are most frequent, and there they keep hopping on the road before whoever disturbs them; but seldom allows one to approach nearer than a distance of twenty or twenty-five yards."

"*Vidua erythroryncha* — (27.28) — 'Fetish bird' of the Fantees. Shot 30th June, 1847, in a piece of ground covered with grasses, and interspersed with a few low shrubs, chiefly acaciæ, in the immediate vicinity of a salt water lake, situate a little to the westward of the 'Castle.' Both are males; and these elegant little birds were seen, among a considerable flock of others, which appeared to be females, as they kept flying with a peculiar jumping flight, at one time after one and then after another. When about to perch, they hover for a few seconds over the tree or bush; and being exceedingly tame, allowed persons to approach very close. Their crops were filled with small seeds like millet."

"*Vidua chrysonotus* — (7.18) — The bird appears rather rare in the vicinity of Cape Coast Castle; its note is a sharp short chirp. From what I have seen of this bird, both flying and perched, I am not aware that it spreads out its tail in the form of a boat, or elevates it as Mr. Swainson suspects."

"*Macronyx flavigaster* — (55) — This is the first specimen of the bird I have met with here, we may therefore consider it somewhat uncommon. I had not an opportunity of hearing the note of

this bird. It was shot while flying with a short jerking flight over an open plain, on which reeds and grasses grew thickly, to the height of about a foot and a half. Its gizzard was filled with remains of grasses, and insects, apparently beetles."

"*Corythair senegalensis*—(56)—Shot in the dense forest in the vicinity of Cape Coast Castle, September 9. This bird is very frequently seen on this part of the Gold Coast; but being very wary, and seldom leaving the highest trees, it is extremely difficult to shoot. The note is a very hoarse kind of crow.

"The bill, in a fresh state, is all of a pale orange colour; the iris light chestnut. The arrangement of the feathers in front of the eye is peculiar, pointing upwards, covering the nostrils, and joining at the forehead, conceals about the proximal half of the upper mandible. The nostrils are oval, large, and open, but covered by the feathers.

"This bird seems to approach very closely that which Swainson alludes to (p. 226) as described by Edwards, except that in this the crest is of a uniform grass green colour, whereas the one figured by Edwards is described as tipped with red. The white streak, which Mr. Swainson states as not existing in any of his specimens, is very distinct under the eye of mine, so is also the glossy black streak, or rather spot, which occupies the anterior and lower third of the orbit, and separates this white streak from the one which extends upwards and backwards to about a third the extent of the upper eyelid. The arrangement of the legs and feet are peculiar. The whole length of the posterior *surface* of the tarsus is rough, as if covered with small warty excrescences. The outer toe is versatile, as I have myself witnessed in a bird of this species, which was for some time kept in a cage. Although these birds are doubtless exceedingly beautiful, I cannot agree with the description given by Le Vaillant:—When flying in the rays of a powerful sun, their various colours contrast beautifully, but their flight is rather clumsy than elegant; and when perched on a tree, they always seem as if *cowering* from a person's view."

"*Centropus senegalensis*—(58)—Called by the Fantees '*Berak-hoo*,' and known among the residents on the gold coast as the '*Scotchman*,' probably on account of its being such a remarkably

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cautious bird; always inhabiting the very thickest of the bush, so that it is very difficult to be got at. It is, without exception, the most offensive bird that I have ever met. It is infested with myriads of insects, in form and appearance precisely similar to the ticks found upon dogs—and having been left in my quarters for a night previous to being skinned, it rendered it so offensive, that it had to be regularly fumigated before the stench could be got rid of. Iris, crimson.

“*Leptosomus erythropterus*, Sw.—(81)—This bird is usually seen sitting on the ground, and when disturbed, its flight is low and very heavy.”

“*Vinago nudirostris*—(38)—♂, shot at Cape Coast Castle, 9th July. In its crop were a few soft berries. The only addition that I can make to the description of this bird, given in the ‘Birds of Western Africa,’ is to state, that the colour of the feet, in the fresh specimen, is very light gilvous (sulphur colour); the iris consists of two differently coloured rings—the inner of a yellow or saffron colour, the outer beautifully pink, both of the same breadth; the basal half of the bill is very bright red, and the feathers arise from its base in such an abrupt manner, that they appear as if some of the smaller ones had been rubbed off. The most minute examination of the bird, when first shot, however, did not detect any remains of such an accident. This bird does not appear common, at least at this season.”

Turtur semitorquatus—(46)—Shot, Cape Coast Castle, 10th July. Was sitting with a large flock in a newly cultivated field. The crop, full of grain and berries; bill, black; the orbits naked, of a dull red; the feet dull red.

The specimen differs, in many respects, from Swainson’s description of *T. semitorquatus*, although in the greater number of characters they are precisely similar. In this, the front, instead of “vinaceous,” is very light grey; the chin is whitish—but the vinaceous, on the under parts, extends to the belly, and blends with the grey of the vent and under tail-feathers; the wing-covers are the same “drab-brown” as the outer scapulars (but have no white edges), with a slight violet gloss upon the shoulders; the “outer

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toe" longer than the "inner;" the basal, two-thirds instead of "half" of the four outside pairs of tail-feathers deep black; the tips white, the two central are entirely of the same drab-brown as the greater part of the back; the bill is "black," but the feet "dull red;" the orbits are "naked," and, like the feet, of a dull red colour; on the outer edge of the primaries a very narrow line of white, gradually becoming narrower and less distinct, until it is lost in the secondaries. After all, this would appear to be the female of Swainson's *Turtur erythrophrys*, as the marked difference in the relative length of the lateral toes distinguishes it entirely from the one just described; yet, in other respects, there is such a marked resemblance, that the little differences would be easily accounted for by mere sexual peculiarities. The two would be best distinguished by comparison.



A SYSTEMATIC INDEX

TO A

SERIES OF DESCRIPTIONS OF BIRDS, PUBLISHED BY C. J. TEMMINCK,

IN HIS

“CATALOGUE SYSTÉMATIQUE DU CABINET D'ORNITHOLOGIE, ETC.,”
OF THE YEAR 1807.

CATALOGUE Systématique du Cabinet d'Ornithologie, et de la Collection de Quadrumanes, de C. J. Temminck, 8vo. Amsterdam, 1807, is the original title to the above little tract, which is very rare—and the only copy of it which I have ever seen belongs to Dr. Lichtenstein, at Berlin. Many of the descriptions of new species, which it contains, are long prior in point of date to those given by later authors; but as M. Temminck followed the defective practice of the Buffonian school, in only giving *vernacular* names to the species, the priority of their systematic designations belongs to others. The descriptions, however, are valuable from their accuracy; and we are now indebted to Dr. Hartlaub of Bremen, for the following “*Concordance*,” in which this early work of the venerable Temminck is adapted to the present state of science.

Dr. Hartlaub states, that many of Vieillot's descriptions were either copied from this pamphlet, or founded on an examination of the same specimens; and that most of the South African birds, in the collection, had been brought home by Le Vaillant.—

H. E. Strickland.

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2. *Asturina nitida*, (Lath.) *Asturina cinerea*, Vieill.
3. *Coracias temminckii*, Vieill.
4. *Agelaius frontalis*, Vieill.
5. *Quiscalus versicolor*, Vieill.
6. *Ploceus velatus*, Vieill. Encycl. p. 701.
7. *Quiscalus major*, Vieill.
8. *Oriolus bicolor*, Temm.
9. *Oriolus chinensis*, Gm. av. jun.
10. *Oriolus larvatus*, Licht.
11. *Sphecotheses viridis*, Vieill.
12. *Ptilonorhynchus smithii*, Vig.
13. *Pastor temporalis*, Temm.
14. *Trogon leverianus*, Vieill. Enc. 1360. *T. albiventer*, Voigt.
15. *Trogon collaris*, Vieill.
16. *Trogon narina*, Temm.
17. *Zanclostomus aratus* (Vieill.) Enc. 1333. *Z. flavirostris*, Swains.
18. *Zanclostomus melanogaster*, Vieill. Ib. 1337. *Melias corallirhynchus*, Less.
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22. *Cuculus prionurus*, Illig. Licht. Doubl. Catal.
23. *Picus rubidicollis*, Vieill.
24. *Picus brachyurus*, Vieill. Wagl. spec. 71.
25. *Picus erythronotus*, Vieill. Enc. p. 1306. *P. neglectus*, Wagl.
26. Quid?
27. *Picus rubescens*, Vieill. Enc. 1317. But not the *miniatus* of Wagler.
28. *Picus fulviscapus*, Ill. *P. fuscescens*, Vieill.
29. *Picus biarmicus*, Cuv. *P. mystaceus*, Vieill.
30. *Alcedo beryllina*, Vieill. *A. biru*, Horsf.
31. *Halcyon fuscicapilla*, Lafresn. Mag. de Zool.
32. *Halcyon cyanoleuca*, Vieill. Enc. p. 395.
33. *Ceryle amazona*, (Lath.) *A. rubescens*, Vieill.
34. *Merops erythropterus*, Lath. *M. minutus*, Vieill.
35. *Ptiloris magnificus*, (Vieill.)
36. *Promerops cyanomelas*, Vieill.
37. *Nectarinia elegans*, Vieill.
38. *Anthreptes javanica*, (Horsf.)
39. *Nectarinia subflava*, Vieill. Enc. 593.
40. *Nectarinia cuprea*, Shaw. *Cinnyris nibarus*, Vieill. and *C. tricolor*, Vieill.
Enc. 597, 598.
41. *Nectarinia fusca*, Vieill. Vaill. Afr. pl. 296.
42. *Manorhina melanocephala*, (Lath.)
43. *Manorhina viridis*, Vieill. *M. melanophrys*, Lath.

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83. Le Gobe-mouche militaire, p. 241. Nouvelle Zélande
84. Le Tyranain, p. 241. Cayenne
85. L'Alouette striée, p. 242. Nouvelle Galle mérid.
86. Le Figuier gris-albin, p. 243. Isle de France
87. Le Figuier cercle-en-queue, p. 243. Guiane

TO TEMMINCK'S DESCRIPTIONS OF BIRDS.

MODERN SCIENTIFIC NAMES.

44. *Melithreptus lunulatus*, Sh. M. albicapillus, V. Enc. 606.
45. *Trochilus albiventris*, Less. ?
46. *Cinclosoma punctatum*, (Lath.)
47. *Orthonyx spinicauda*, Temm.
48. *Myrmeciza domicella*, (Licht.)
49. Incomplete description ?
50. *Tinactor caudacutus*, (Vieill.) T. fuscus, Wied.
51. *Formicivora atricapilla*, Vieill. Enc. 683.
52. *Thamnophilus cristatus*, Pr. Wied. ?
53. *Formicivora leucophrys*, Vieill. M. superciliaris, Licht.
54. *Formicivora melanoleuca*, Vieill. Enc. 683.
55. *Lipangus hypopyrrhus*, (Vieill.) Enc. 761. Muscicapap sibilatrix, Pr. Wied.
56. *Iodopleura fusca*, (Vieill.) Enc. 761. I. laplacei, Eyd. G.
57. *Colius guiriva*, Le Vaill. C. erythromelon, Vieill.
58. *Colius nigricollis*, Vieill. Enc. 865.
59. *Spermophaga oryzivora*, (Gm.) Pale variety.
60. *Spermophaga guttata*, Vieill. Enc. 1007.
61. *Amadina fasciata*, (Gm.)
62. *Euplectes ignicolor*, Vieill.
63. *Fringilla aurea*, Vieill. Enc. 962. (Quid?)
64. *Sycoobius gregalis*, (Licht.) Ploceus bicolor, Vieill. Enc. 698.
65. Quid ?
66. *Artamus cinereus*, Vieill.
67. *Artamus albobittatus* Cuv. A. lineatus, Vieill.
68. *Philetarus socius*, (Lath.) P. lepidus, Sm.
69. *Ploceus jonquillaceus*, Vieill. Enc. 700.
70. *Sycoobius rubricollis*, Sw. S. cristatus, Vieill. ♀
71. *Euplectes melanogaster*, (Lath.) ?
72. *Tanagra cyanoptera*, Vieill. T. cana, Swains.
73. *Tachyphonus niger*, Vieill. Enc. 794.
74. *Pyranga cyanicterata*, Vieill. Enc. 798.
75. Quid ?
76. *Fringilla erythronotos*, Vieill. Enc. 979.
77. *Fringilla ornata*, Vieill. Enc. 979.
78. *Spermophila olivacea*, (auct.) Emberiza, Lath.
79. Quid? Vieill. Ois. chant. pl. 38.
80. *Rhipidura tricolor*, (Vieill.) Enc. 822. R. motacilloides, Vig. H. ?
81. *Oreocincla varia*, (Pall.) Blyth, Ann. and Mag. 75, p. 98.
82. *Campephaga humeralis*, Gould.
83. *Monarcha carinata*, Temm. Musc. melanopsis, Vieill. Enc. 826.
84. *Tyrannulus elatus*, Vieill.
85. Quid ?
86. *Zosterops (?) borbonicus*, (auct.) Enc. 460.
87. *Myrmothera surinamensis*, (Lath.) Gen. Hist. iv. pl. 62.

A SYSTEMATIC INDEX

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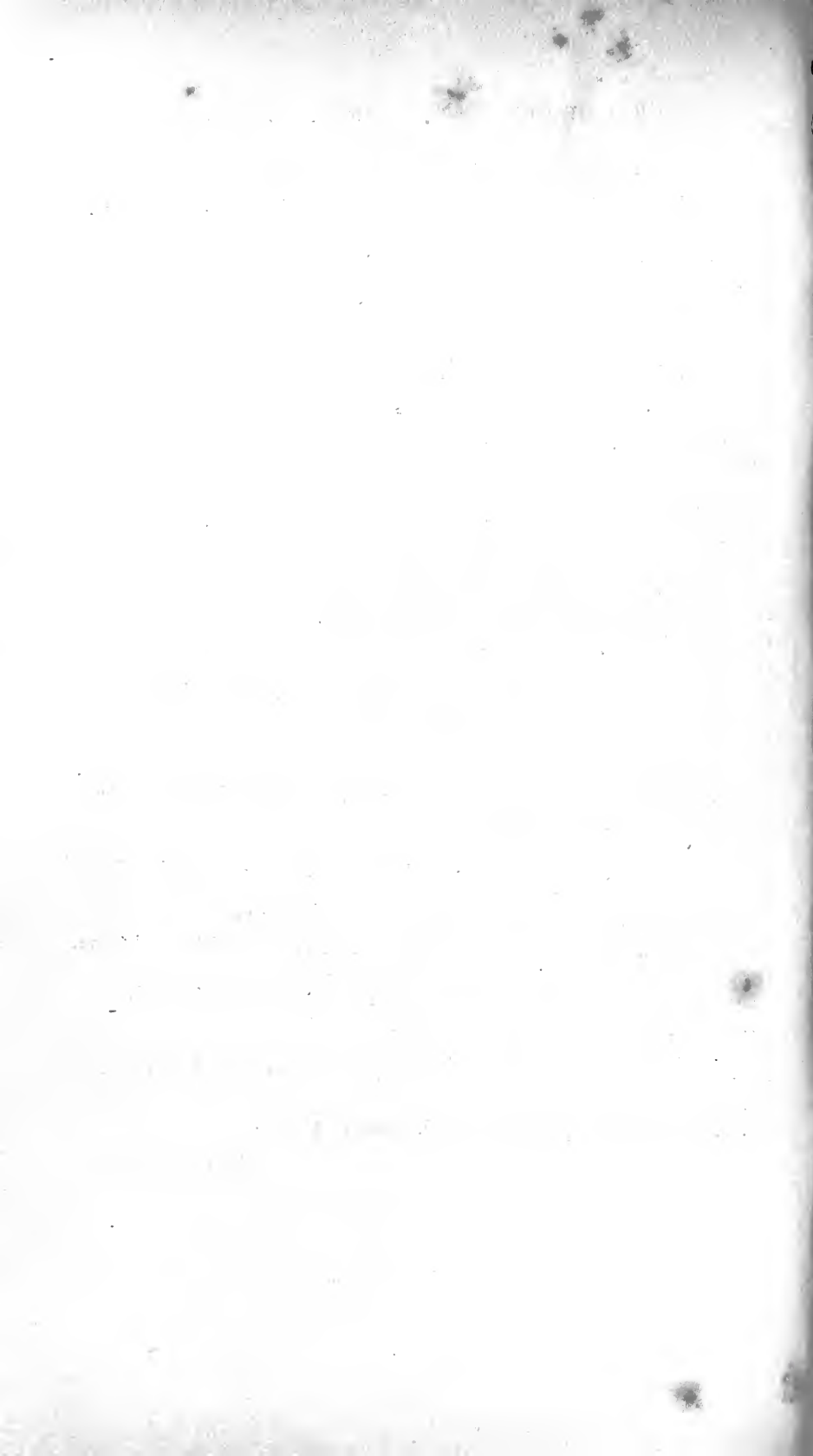
88. Le Figuier lancifer, p. 244. Nouvelle Galle mérid.
89. Le Manakin cotimanac, p. 245. Guiane
90. L'Hirondelle verte, p. 245. Iles Sandwich
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104. Le Pigeon ramier ardoisé, p. 254. Otaheite
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TO TEMMINCK'S DESCRIPTIONS OF BIRDS.

MODERN SCIENTIFIC NAMES.

88. *Chthonicola minima*, Vig. H. (Gould.) *Sylvia nitida*, Vieill. Enc. 454 ;
and *S. pyrrhophrys*. V. ib. 464.
89. *Pachyrhynchus splendidus*, Pr. Wied. P. Spixii, Swains.
90. *Procnias ventralis*, Illig. ♀.
91. *Caprimulgus leucopterus*. Pr. Wied, Beitr. iii. p. 311.
92. Quid?
93. *Columba lamprauchen*, Wagl. spec. 46.
94. *Carpophaga spadicea*, (Lath.) Wagl. spec. 12.
95. *Ptilonopus cinctus*, (Temmm.) Wagl. spec. 19.
96. *Columba arquatrix*, Temmm. Wagl. spec. 50.
97. *Treron calva*, (Temmm.) Wagl. spec. 3.
98. *Ptilonopus holosericeus*, (Temmm.) Wagl. spec. 25.
99. *Ptilinopus superbus*, Temmm. Wagl. spec. 32.
100. *Carpophaga cristata*, (Temmm.) Wagl. spec. 14.
101. *Ptilonopus jambu*, (Gm.) Wagl. spec. 28.
102. *Peristera tympanistris*, (Temmm.) Wagl. spec. 102.
103. *Peristera larvata*, (Temmm.) Wagl. spec. 67.
104. *Phaps picata*, (Lath.) *Col. armillaris*, Temmm. Wagl. spec. 42.
105. *Ardea pacifica*, Lath. Wagl. spec. 5.
106. *Ardetta exilis*, (auct.) Wagl. spec. 43. [Very small specimen.]
107. *Ardetta nigra*, (Vieill.) Enc. 1118.
108. *Ibis hagedasch*, (Sparrm.)
109. *Schœniclus subarquatus*, (Gm.)
110. *Tringa canutus*, L. *ptilos. aestiv.* Pr. Wied, Beitr. iv. p. 735.
111. *Erythrogonys cinctus*, Gould.
112. *Lobivanellus gallinaceus*, Temmm.
113. *Vanellus leucurus*, Licht. Eversm. Bokh., p. 137. V. *grallarius*, Less.
114. *Charadrius pecuarius*, Temmm. Pl. col. 183.
115. *Charadrius tricollaris*, Vieill. C. *bitorquatus*, Licht.
116. *Cursorius africanus*, Temmm. Catal. Syst. p. 175. C. *bicinctus*, Temmm.
117. *Rallus fuscescens*, Vieill. Enc. 1065.
118. *Ortygometra olivacea*, (Vieill.) Enc. 1063. *Crex gularis*, Jard.
119. *Parra indica*, Lath. P. *ænea*, Cuv.
120. *Ortygometra nigra*, (Gm.) G. *flavirostra*, Sw.
121. *Ortygometra rufa*, Vieill. Enc. 1070. *Crex ruficollis*, J. E. Gray.
122. *Podiceps minor*, Lath.
123. *Plotus levaillanti*, Temmm. Catal. System. p. 196.

Dr. G. Hartlaub.



UNPUBLISHED CORRESPONDENCE OF LINNÆUS.

ALL the unpublished letters of Linnæus must possess great interest. One of the following letters is in the possession of Mr. Gould, and the second, with two others, were procured by him for our inspection, and with permission to publish if we deemed them sufficiently interesting. Both the following letters are written to the Rev. John White, brother to White of Selborne, and the last is addressed to him at Gibraltar, at the period when he meditated his *Fauna Calpensis*. Allusion is made to this work in the two other letters, which will be given in an early number, but so far as we have been able to discover, we cannot find that this work was ever published, neither can we trace the MSS. Dr. White must have been some time in correspondence with Linnæus, as he is mentioned as about to write to him, in a letter from Dr. Solander to Mr. Ellis in 1762. The present letters bear a date ten years later, or about the time when the correspondence of Linnæus was at its fullest, and embraced that of nearly every naturalist in the world.

To the ornithologist these letters are interesting, as pointing out that the authority for *Hirundo (cypselus) melba*, in the 12th edition of the *Systema*, 1766, was probably taken from Edwards, and that the species was first seen at the date of this letter; while the *H. rupestris* does not occur in the 12th edition at all, and was probably only referred to from some question put by Mr. White. In the 12th edition, the *Pratincole* is placed with the swallows, and the remarks will be read with interest. Linnæus had apparently not seen this form in 1772. *Motacilla tithys* is omitted in the 12th edition as a species, though noticed as β . under the *Phœnicurus*.

VIRO REVERENDISSIMO D^{NO} JOHANN WHITE.

S. pl. D. — CAR. LINNE.

LITERAS tuas V. R. die 30 Junii ante octiduum planè consternatus aperui, dum tuq. cui nunquam mihi fortuna innotescere concessit, mihi offers tuam gratiam, tuas divitias naturalium rerum. Mihi verba deficiunt explicandi affatum meum sincerum in virum tanto virtutis robore. Gratulor scientiæ, quam ambo in deliciis habemus, quod qui fata rerum gubernat te excitaverit in admirationem mundani operis Artificis. Nullum ego novi, in regione quam inhabitas, cui Deus antea concessit apertos oculos in regione intueri naturalia ubi concurrunt Hispanicæ, Lusitanicæ, Barbariæ Plantæ, Insecta, Aves, reliqua Animalia; ad Fretum penetrabunt Pisces omnes qui ex oceano in M. Mediterraneum ire et redire debent. Tu profecto, si in Europâ ullus, videbis plurima Creatoris miracula.

Piscium nominatorum nullum majori desiderio examinarem, quam *Lepadogastrum*, cujus ideam nequeo mihi a Gouani opere ritè formare, ut certus evadam, utrum *novum* formet genus, necne.

Hodie accipio lagenulam a te generosissimè mihi oblatam, in qua reperio rarissima tua Insecta.

Sphex ista cum maculis 4 dorsalibus abdominis, a me nunquam antea visa fuit. Addidisti et ejus varietates cum capite variegato, cum antennis luteis, cum maculis dorsalibus tantum Duobis.

Sphex altera non minus rara et admodum singularis *alis* (laciatiis v. erosis?) ferrugineis apice nigris; neq. illa a me visa fuit.

Mutilla an apud vos frequens? hic rarissima, an innotuerit ejus œconomia? habeo jam eam alatam.

Chrysis species varias vidi. Sed quid in his sit sexus differentia, non potui adhuc addiscere.

Gryllus Turritus ad me antea tantum e Dorbaria missus fuit. Adhuc hæsito de sexu, alia mea individua habent antennis magnas ensiformes; alia antennis minutas setaceas. Quæso inquiras in tuis Gryllis turritis num uterq. sexus habeat similes antennis.

Tabanus iste forma muscæ itidem mihi novus et rarissimus fuit.

UNPUBLISHED CORRESPONDENCE OF LINNÆUS.

Panorpa coa, cum vobis vulgatissima, omnium in votis esset ejus metamorphosin habere notissimam.

Gryllus turritus habet caput acumdatum, sed os versus terram adeoq. nutans dici potest.

Neq. *Spheæ fisipes*, neq. *clavipes* erant in vitro; quas inclusas scribis.

Chrysis tua viridis ano cæruleo videtur nova species.

Mutilla tua vix diversa est a mea.

Lucanus tuus erat *Lucanus parallelepidus*.

Cancer lateribus 3 spinosis mihi antea visus non fuit.

Si unquam capere posses, et me donare velles *Pratincola Trachelia*, esset mihi munus quod cum *Lepadogastro* præ reliquis maxime delectarer. *Tracheliam* aliquis mihi dixit debere amandari ad hirundines; sed maxime dubito adhuc de veritate.

Pennant a te dives factus fuit rarissimæ naturæ Cimeliis.

Utinam possem aliquid tibi prestare pro tanto dono; anxius ero.

Upsalæ, 1772, d. 20 Januarii.

This letter is addressed—

To the Rev^d M^r JOHN WHITE,

To the care of Mr. WHITE,

Bookseller in Fleet Street,

LONDON.

FRANCO AMSTERDAM.

VIRO REVERENDISSIMO DN^o JO. WHITE.

S. pl. D.—CAROL. LINNE.

ACCEPI nuper Thesaurum Tuum vere aureum, missum d. 13 Maji, nec gratiorem unquam. Quibus verbis Tuam in me predicabo gratiam effari nequeo. Aviculas Tuas rarissimas antea non vidi; eas studebo diligenter urbi et museo S. Bibliothecæ reditus, qui nunc ruri æstivo.

Hirundo melba; quam antea non vidi, affinis H. Apus.

Hirundo rupestris mihi antea ignota; vere distincta.

Coturnix tridactyla; an ex ordine Gallinarum aut Grallarum?

Motacilla tithys Longe a meâ aliena.

1. *Zeus* an *Perca* proprii generis piscis et novi: capite excoriato, reticulato—cœlato.

Coryphæniodes vix videtur, convenire cum generibus notis
Doleo quod pinn. Dorsi, ani, et caudæ erant mutilatæ
ut radios numerare not licuerit.

2. *Perca Dipterygia rubra*. Ad *percæ* genus forte pertinebit; caput licet muticum; ob pinnas 2 dorsales vix *Sparus* aut *Labrus* erit.

Cancer arctus omnino

Cancer carinatus

3. *Cancer Antennis Longissimis*

Cancer Rostro Longissimo

Cancer minutus

Cancer brach. hirsutus.

} Hæ squillæ, ut ut valde affines,
videntur vere specie distinctas esse; cum pedes didactyli differant in diversis.

Mihi antea non visus.

Lacerta lemniscata est.

Scarabæus Hispanus est.

———— *Typhæus* est.

———— *Laticollis*; sed elytra non striato. An sexu.

4. *Scorpio australis* est; *Scorpio Calpensis*.

UNPUBLISHED CORRESPONDENCE OF LINNÆUS.

Scolopendra morsitans est.

————— *forcata* est ; quæ minor.

Meloe majalis est.

Asilus barbarus est.

Chrysomela sanguinea est.

Carabus granulatus est.

Tenebrio tibialis est.

Cottus gobio est.

Mantis gongylodes. An larva ?

5. *Cimex morio*. Qui copiosus erat.

Chrysomela goetingensis est.

————— *staphylea* est.

————— *marginata* est.

Curculio anguinus est.

————— *nebulosus* est.

————— *barbaro similis*, sed triplo minor.

————— *Whitei!* *brevirostris*, ater, undiq. punctatus, novus.

Silpha littoralis est.

————— *rugosa* est.

————— *oblongata* est.

Scarabæus sabulosus est.

Hister ater, nitidus, elytris striis 5 dimidiatis obliteratis,
novus.

Upsalia, 1772, d. 7 Augusti.

This letter is addressed—

Viro Reverendissimo

D^{NO} JOHANNI WHITE,

GIBERALTAR.

ANTWERPEN.

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
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UNPUBLISHED CORRESPONDENCE OF LINNÆUS.

WE now fulfil our promise in giving the other two unpublished letters referred to in our last number. The ornithological remarks will again be found interesting; and in the first *Fauna Calpensis* is there referred to as either in progress or in preparation for the press.

REVERENDISSIME DOMINE.

LITERAS tuas V. R. dies 26 Novemb^r nuper habui. Gratulor reditum in patriam. Lætor quod vales.

Te non accepisse literas meas posteriores miror, forte iis non inscripsi sic dictam assignationem domus, quod non recordor; me rescripsisse optime recordor.

Inter tua erant multa, quæ æternæ memoriæ mandari deberent, et ego in meis MSS. auri instar asservo propediem edituris, non sine inventoris honorifica memoria.

Tetrao Tridactylus est tam singularis in suo ordine, ut, nisi vidissem, non credidissem. Quid de hac ave dicit D. pennant?

Piscis Thoracicus novi generis est cranio nudo, suturis plurimis exarato, Diaphano.

Motacilla antea mihi non cognita.

Hirundo rupestris nescio an varietas Apus?

Spheges tres videntur valde affines, nec eadem.

Cancris Squillæ, 7 species ni fallor, quanquam valde similes; sic indicant partes, chelæ reliquas distinctè descripta.

Apis propria species et reliqua omnia, pro quibus dum vixero ero in tuo cere.

Exemplaria meorum operum omnia distracta sunt, ut nullus ea comparavi queat in patria; novam darem eorum editionem, sed editor Salvius ante dimidium annum occubuit. Admodum multi a me expetiere exemplaria, sed comparare nulla ratione ipse possum,

si aliquis in Anglia ea edere vellet, possem præbere exemplar observationibus innumeris et speciebus ultra mille auctum, cum ex omnibus indies garophylaicis instructus fui ab eo tempore, quo ultimam dedi editionem; ut taccam synonyma Auctorum plurium recentissimorum. Optarem imprimis systema naturæ, genera et species plantarum novo editione, me vivo, prodire.

Anglicam linguam loquentem satis intelligo, scriptam non æque facile; ipse anglice scribere nequeo. Dum lego scripta, pleraque capio; si unum alterumve verbum deficiat, istud facile evolvo. Possem semper etiam habere amicos, qui optime linguam explicant.

Fauna Tua Calpensis esset et mihi et omnibus exoptatissima.

Pratincolam nunquam vidi; quæ de ea habent Scopoli, Pennant, Gmelin et recentiores alii, vidi ad Grallos eam referunt plurimi; licet rostrum videtur multum differre.

Lepadogaster neq. a me visus fuit; videtur admodum singularis.

Logie, octogenarius, qui fuit consul Algirensis, vivit adhuc; at filius, qui ibidem serius consul factus fuit, etiam mihi notus, sed de eo, ab adventu Algeriam non audivi; scio tamen alium consulem Suecicum Algeriæ nunc esse Algeriæ.

Vale et fave Tuo

Sincero cultori,

CAR. LINNÆ.

Upsaliæ, 1774, d. 2 Januarii.

Si novisti Virginem egregiam Anna Blackburne ipsam plurimum salutes. Floræ et Faunæ filia est, in cujus amores ardeo.

This letter is addressed—

To

The Rev^d JOHN WHITE,

Vicar of Blackburn,

LANCASHIRE.

Franco Amsterd.

VIRO REVERENDISSIMO ET VENERANDO.

D^{NO} J. WHITE.

S. Pl. D. — CAROL. LINNÉ.

ACCEPI literas tuas, ad calend. Januarii datas, suo tempore et ad eas regressi. Accepi et datas d. 1. Martii, et 22 Aprilis. Accepi et ante duos dies merces tuas et dona vere aurea; pro quibus omnibus ac singulis grates immortales reddo, reddamq. dum vixero.

Sturnus collaris, Scop. ann. 1, p. 131. *Fringilla sordone*. *Manett. Orn.*, t. 338, f. 1. *Avis Kyburgensis*, *Gesn. Orn.*, app. 725. *Muscicapa gula alba fusco undulata*, tectricibus alarum nigricantibus apiculo albo (*collaris*) mihi dicenda. Rostrum admodum parum est emarginatum. Diversa a *Turdo arundinaceo*.*

Turdum pygargum non antea vidi; erit equidem *Turdus*; apex rostri modice incurvus.

Pratincolam antea non vidi; ad *Grallas* spectat et proprii generis est.

D^{NO} *Lever* ne desinas grates meis verbis agere pro egregie et pulcherrime conservatis aviculis, quibus me beare voluit.

Phytolithi filicium erant certe optimi isti lapides qui referunt tœnias non vidi; an radicum plantarum aquaticarum rudimenta?

Ista impressio in shisto, ita refert *sertularium* quandam *Ellisii*, ut nisi magnitudo vetaret, dicerem eam *sertulariam*.

Alia foliis atris linearibus est *Zostera*. Quadrati polit. *Quartzum coloratum* γ. *Syst. Nat.* 3, p. 65.

Fuci rubri et pilosi impressiones rariores.

Lepadogaster, *Gouan*, in lagenula est certe *cyclopterus nudus* meus. *Syst. Nat.* 414, n. 2.

Attelabus calpensis, hunc etiam ab aliis accepi.

Tenebrio femoribus uncinatis (bispinosis) *Tenebrio calpensis* mihi dicendus.

Motacilla cauda albo nigroque maculata, a me antea non visa.

Myrmeleon formicarium nostrum habet in alis stigma album, habeo jam insectum coram.

* This bird is the *Accentor alpinus*.

Formica lyn lege formica lynx.

Artedi opera non prostant apud nos, sed Leidæ.

Gryllus umbraculatus, ubi habitat; quid agit cum umbraculo?

Te datore optimo multa animalia habeo.

Tetrao tridactylus pedibus nudis tridactylis.

Hirundo rupestris, nigricans, rectricibus sub-æqualibus; 2.3.
macula alba.

Piscis thoracicus capite excoriato nondum nomen imposui.

Atelabus calpensis cærulescens thorace piloso elytris rubris
punctis 3 nigris.

Spheæ mutabilis atra pedibus hirtis, abdomine maculis luteis
plerumque quatuor.

Spheæ erosa nigra capite thorace alis pedibusq. ferrugineis.

Apis calpensis labio superiore acuminato inflexo abdominis seg-
mentis punctis geminis nigris.

Cancer dieresus brachyurus thorace lævi linea transversa in-
sculpto, marginibus serratis, chelis scabris.

Cancer brachyurus subhirsutus manibus totis ciliatis.

Cancer ex squillarum prosapie 4 distincta nondum posui differen-
tius, et numerâ plura, præter ultima te inventore alleganda.

Literæ excresserent in infinitum, si simul et semel omnia res-
ponso exponerem, nunc aliis negotiis implicatus reservo reliqua
proximæ epistolæ.

Scripsi multa addenda *vol. i., Syst. Nat.* idq. quotidie; absolvi
dimidium tomum. Si tuus frater edat, certus sum quod hoc pro-
deat optimis typis, qui Anglis communes. Tam multa quæ quotidie
prodiere post priorem editionem operis, et quæ allegavi multum
laboris expostularunt. Si vixero absolvam opus in Autumnum.
Quid mihi offerat in sostrum?

An poterit habere optimum correctorem typi?

Upsaliæ, 1774, d. 3 Julii.

Addressed to—

Viro Reverendo

Domino JOH. WHITE,

LONDON,

Blackburn.

Franco Amsterdam.

ORNITHOLOGY OF QUITO.

WE have lately received a small collection of birds from the vicinity of Quito, through the attention of Professor William Jameson of the University there. That gentleman is already well known to botanists, from the large and valuable collections and notes which he has from time to time transmitted to Sir William J. Hooker; and we are glad to have been able to enlist his services in procuring for us the ornithology of the same country, and to revive in him a taste for a department of natural history which he formerly delighted to study. Our first consignment contained only seven species, being made hurriedly on receipt of our letters; but among them are some birds of interest. Another parcel is now on the way; and we propose to notice and record the contents of each as they reach us; and hope that we may also be supplied with such notes of their habits and zones of distribution, as will enable us to give a somewhat connected account of the ornithology of that elevated and remarkable region.

The ornithology of Peru has already been explored by Tschudi and D'Orbigny; and as the observations of the latter inform us, that the extent of the distribution of the birds on the eastern side of South America is very diffused, reaching from latitude 15° to Patagonia, a distance of 440 leagues, we may expect to find, and have already received, species identical with some of those described by the before mentioned travellers, yet we are not aware that the vicinity of Quito has been completely or even partially examined, or the mountain chain of the Andes between Quito and the 11° , where the researches of D'Orbigny cease, explored. None of the species now received have been killed at an elevation below 11,000 feet, some as much as 14,000 feet above the level of the sea; and the dull plumage and uninviting forms which they in general exhibit, do not tempt dealers, as in other parts of South

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America, to collect birds for commerce,* whence we may expect that some species may not yet have found their way into the collections of this country.

D'Orbigny, who bestowed much attention during his travels to the subject of geographical distribution, has made some interesting observations upon the range of latitude and elevation in his prefatory remarks on the "Passereaux."

The number of species belonging to this order which he met with was 395; and for the distribution of these he divides the southern continent of America, from the 11° south, from whence his travels extended, into three zones of latitude, and three zones of elevation above the sea level, and considers, that between the Tropic of Capricorn and the Line, the zones of elevation correspond with the zones of latitude. These zones are—I., from the 11° to 28° south—II., 28° to 34° —III., 34° to 45° ;—and I. from 0 to 5000 feet—II., 5000 to 11,000—III., above 11,000.

The first zone of latitude exhibits the greatest variation in its physical characters; vegetation is displayed in all its richest luxuriance, variety and grandeur, and there is an immense exuberance of insect life. The proportion of the number of species here is very great, no less than 240, 51 of which are also common to the mountain region, not exceeding 5000 in elevation, whence 189 species remain as properly belonging to the *plains* of this first zone.

In the second zone of latitude, 72 species only were found exhibiting a very marked diminution towards the south. There are no longer found the dense forests or plains so varied in their vegetation; the country assumes a more uniform aspect, and the diminution of food of all kinds is the consequence. Of these 72 species, 29 are common to about the 15° of latitude, and to the mountains varying from 5000 to 11,000, which, from their temperature and its influence on vegetation, are considered to correspond; and thus it results, that only 43 species properly belong to this second zone of latitude.

In the third zone the species continue to decrease, and amount to

* In the vicinity of Rio de Janeiro, the collection of birds is a regular trade. Prince Adelbert of Prussia, in his Travels, mentions a Mr. Besecke, "a trader in birds' skins and taxidermist." He gives employment to above thirty huntsmen, and had, at the time of the prince's visit, 35,000 birds on his shelves, which formed his chief article of trade.—II. p. 23, *Schomburgk and Taylor's Translation*.

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only 37, dependent upon the climate, and its influence on insect and vegetable life. Of these 37 species, notwithstanding the great distance, 8 are still met with, which are at the same time common to the 15° of latitude, and to the mountain ranges, exceeding 11,000 feet in elevation—leaving to this zone of latitude only 29 as properly belonging to it.

Observing the distribution according to elevation, D'Orbigny found, in the first zone, the entire number of species only 83, of which 51 descend to the plains, leaving only 32 peculiar or proper to the mountains of this zone, or the warm region, which is extremely few when compared with the number (189) proper to the Equatorial plains.

In the second zone of elevation, 60 species were observed, a number comparatively with the first zone of elevation as of three-fourths, and with the second zone of latitude which corresponds with it of one-twelfth. These comparisons show, that if there is a small relative proportion between the gradual diminution of the numbers incidental to the two first zones of latitude and elevation, there is a very large one between the numbers in the zone of latitude which corresponds with it. In this zone there are 31 species proper to the mountains.

The third zone of elevation presents only 22 species, being, in comparison with the third zone of latitude which corresponds with it, of only four-sixteenths. Of the 22 species, 8 are also found between the 34° and 45° of south latitude; whence it results, that there are only 14 species peculiar to these very elevated mountain ranges.

These observations relate to the eastern aspect or exposure of the Andes, for on the opposite or western aspect, the discrepancy in numbers is very great. This is caused by the mountains on the one side being clothed with impenetrable forests, where fruitful rains encourage an active and luxuriant vegetation, and where their plains are covered with wood, interspersed with the variation of clumps and open glades, water, and marshy grounds. The western slopes, on the contrary, scarcely exhibit a stunted brushwood, or groups of *Cactus* springing up from among the dry and parched rocks, where it seldom rains, and where the torrents are supplied by the perpetual snows of the elevated peaks. On the eastern slope, then, of the Andes, 374 species exist, while on the western

ORNITHOLOGY OF QUITO.

48 only were met with, and 25 species being common to both aspects, it follows, that on the eastern, 252 only are peculiar—20 only to the western slope.

D'Orbigny has thrown these observations into a table, which both exhibits his views of the classification of the "Passeraux," as well as the numbers of species and distribution of genera according to latitude and elevation. The preceding summary, with a copy of this table on the opposite page, we consider may be interesting, when commencing observations on the ornithology of a region, situate in continuation with that to which his remarks refer; and we only regret, that his observations, on distribution and migration, run to such a length as would much exceed our limits. We may, however, have again to recur to them.

The species which we have received in this small collection are—

Cotinga arcuata, De Lafresn.—“From the forest on the western side of Pichincha; inhabits the cold region.”

Tænioptera alpina, Jard.—“This species occurs on the highest ridge of the Andes, rarely descending below the snow.”—(See Plate and Description.)

Phrygilus unicolor, De Lafresn.—“On the elevated pastures of the Andes, 13,000 to 14,000 feet.”—(See Plate and Description.)

Linnornis, —“From the lofty pastures of Pichincha; frequenting sides of streams.”

Diglossa cyanea, De Lafresn.—“From the forest on the eastern side of Pichincha; in the cold region.”

Trochilus ensiferus.—“Humming bird; occurs on Pichincha, in the shrubby region, 11,000 to 12,000 feet above the sea level.” We would wish much to ascertain the habits of this most remarkably formed species. The length of the bill equals that of the whole bird, and must be suited to some peculiar habit or mode of feeding, or to the structure of some peculiar and prevailing class of flowering plants. In the specimen received, the bill is four inches in length; and Mr. Gould writes us, that in one specimen ♂ in his rich and daily increasing collection of this family, the bill is 4.3 in length, while in an adult female it only reaches to 3.

Columba boliviana, De Lafresn.—“Occurs on the elevated pastures of the Andes; 13,000 to 14,000 feet of elevation.”

COMPARATIVE TABLE of the Habitat in Latitude, and in Elevation above the Level of the Sea, on the Eastern and Western Slopes of the Andes, of the Passeres which we have observed in South America; showing, at the same time, the Number of the Species of each Genus and of each Family, together with the Classification which a Study of their habits obliged us to adopt.

CLASSIFICATION OF PASSERES.	NAMES of GENERA and SUB-GENERA.	LIMITS OF THE HABITAT OF THE GENERA.			Number of Species of Genera.	Number of Species of Families.			
		East to West of Andes.	Latitude South.	Elevation in feet above the level of the sea to 15° of lat. south.					
DENTIROSTRES. SECTION A.—A bec comprimé.	I ^{re} Famille. Laniadées.	Laniagra	E.	11° to 28°	0 to 5,000	1	2		
		Virco	E.	11° to 28°	0 to 5,000	1			
	II ^e Famille. Myotherinées.	Dumicoles	Thamnophilus	E.	11° to 32°	0 to 7,000	13	27	
			Formicivora	E.	11° to 18°	0 to 6,000	6		
		Humicoles	Myrmothera	E.	11° to 18°	0 to 5,000	3		
			Conopophaga	E.	11° to 23°	0 to 5,000	3		
	III ^e Famille. Rhinomydées.		Myothena	E.	11° to 23°	0 to 5,000	2	5	
			Rhinomya	E.	41° to 45°	0 to 5,000	1		
		Sylvicoles	Pteroptochos	W.	33° to 53°	0 to 5,000	4		
			Turdus	E. to W.	11° to 45°	0 to 11,000	5		
	IV ^e Famille. Turdusinées.	Dumicoles	Orphens	E. to W.	11° to 45°	0 to 11,000	5	12	
			Donacobius	E.	11° to 28°	0 to 5,000	2		
Arundinicoles		Sylvia	E. to W.	11° to 28°	0 to 5,000	5			
		Hylophilus	E.	11° to 28°	0 to 5,000	1			
V ^e Famille. Sylviadées.	Dumicoles	Dacnis	E.	11° to 23°	0 to 5,000	4	37		
		Synallaxis	E. to W.	11° to 45°	0 to 11,000	15			
	Humicoles	Troglodytes	E. to W.	11° to 45°	0 to 11,000	7			
		Anthus	E. to W.	11° to 45°	0 to 11,000	5			
VI ^e Famille. Tanagruidées.	Sylvicoles	Nemosia	E.	11° to 23°	0 to 5,000	3	46		
		Tachyphonus	E.	11° to 28°	0 to 5,000	6			
	Dumicoles	Euphonia	E.	11° to 28°	0 to 5,000	4			
		Tanagra	E. to W.	11° to 34°	0 to 11,000	14			
VII ^e Famille. Pipradées.		Pyranga	E.	11° to 28°	0 to 5,000	2	3		
		Ramphocelus	E.	11° to 23°	0 to 5,000	1			
	Dumicoles	Embernagra	E.	11° to 43°	0 to 8,000	4			
		Saltator	E.	11° to 34°	0 to 11,000	9			
VIII ^e Famille. Coracinaées.		Phytotoma	E. to W.	11° to 34°	5 to 11,000	3	1		
		Rupicola	E.	11° to 18°	0 to 5,000	1			
	Humicoles	Pipra	E.	11° to 28°	0 to 5,000	2			
		Cephalopterus	E.	11° to —°	0 to 5,000	1			
IX ^e Famille. Ampélidées.		Querula	E.	11° to 20°	0 to 5,000	1	5		
		Ampelis	E.	11° to 28°	0 to 5,000	3			
	Sylvicoles	Tersia	E.	11° to 23°	0 to 5,000	1			
		Psaris	E.	11° to 23°	0 to 5,000	5			
X ^e Famille. Muscicapidées.	Dumicoles	Pachyrhynchus	E.	11° to 23°	0 to 5,000	1	88		
		Tyrannus	E.	11° to 45°	0 to 8,000	14			
	Humicoles	Hirundinea	E.	11° to 28°	0 to 8,000	1			
		Muscipeta	E. to W.	11° to 34°	0 to 5,000	17			
XI ^e Famille. Cathartidées.		Muscicapa	E.	11° to 34°	0 to 8,000	14	3		
		Alecturus	E.	11° to 34°	0 to 8,000	2			
	Dumicoles	Tachuris	E. to W.	31° to 34°	0 to 5,000	4			
		Culicivora	E. to W.	11° to 45°	0 to 11,000	4			
XII ^e Famille. Cathartidées.	Humicoles	Gubernetes	E.	11° to 23°	0 to 5,000	1	11		
		Fluvicola	E.	11° to 45°	0 to 11,000	8			
	Dumicoles et Graminicoles	Muscigralla	W.	18° to —°	0 to 5,000	1			
		Pepoza	E. to W.	11° to 45°	0 to 18,000	12			
FUSSI-ROSTRES.	I ^{re} Famille. Caprimulgidées	Muscisaxicola	E. to W.	11° to 45°	0 to 18,000	4	6		
		Nyctibius	E.	11° to 28°	0 to 5,000	1			
	II ^e Famille. Hirundinées.	Caprimulgus	E.	11° to 41°	0 to 5,000	5		11	
		Hirundo	E. to W.	11° to 45°	0 to 18,000	8			
CONIROSTRES.	I ^{re} Famille. Alaudinées.	Cypselus	E. to W.	11° to 23°	0 to 18,000	3	3		
		Certhilauda	E. to W.	11° to 45°	0 to 18,000	3			
	II ^e Famille. Fringillidées.	Dumicoles et Graminicoles	Emberiza	E. to W.	11° to 34°	0 to 13,000		5	44
			Passerina	E. to W.	11° to 45°	0 to 18,000		22	
Sylvicoles	Fringilla	E.	11° to 34°	0 to 5,000	1				
	Carduelis	E.	11° to 45°	0 to 11,000	2				
III ^e Famille. Corvidées.		Linaria	E.	11° to 23°	0 to 11,000	2	10		
		Pitylus	E.	11° to 28°	0 to 9,000	3			
	Sylvicoles	Pyrhula	E. to W.	11° to 23°	0 to 5,000	9			
		Garrulus	E.	11° to 28°	0 to 5,000	4			
IV ^e Famille. Sturnidées.	Dumicoles et Graminicoles	Cassicus	E.	11° to 28°	0 to 5,000	6	22		
		Icterus	E. to W.	11° to 45°	0 to 18,000	14			
	Sylvicoles	Sturnella	E. to W.	11° to 45°	0 to 5,000	2			
		Dendrocolaptes	E.	11° to 28°	0 to 5,000	10			
V ^e Famille. Certhidées.	Grimpeurs	Xenops	E.	11° to 28°	0 to 5,000	2	16		
		Anabasitta	E.	11° to 28°	0 to 5,000	4			
	Dumicoles	Anabates	E.	11° to 45°	0 to 5,000	5			
		Anumbius	E.	11° to 45°	0 to 8,000	4			
VI ^e Famille. Sittalidées.		Furnarius	E.	11° to 34°	0 to 8,000	1	7		
		Uppucerthia	E. to W.	11° to 45°	0 to 18,000	7			
	Sylvicoles	Cercha	E.	11° to 28°	0 to 5,000	3			
		Serrirostrum	E.	11° to 21°	0 to 7,000	2			
VII ^e Famille. Trochilidées.		Trochilus	E. to W.	11° to 34°	0 to 11,000	25	36		
		Ornisniya	E.	11° to 28°	0 to 11,000	11			
	Dumicoles	Prionites	E.	11° to 23°	0 to 5,000	1			
		Alcedo	E. to W.	11° to 34°	0 to 8,000	4			
TOTAL					395				



ORNITHOLOGY OF QUITO.

(Continued from page 45.)

IN our last Number we promised to continue the illustration of the ornithology of Quito and its vicinity by every opportunity; and since the present Number has been in type, we have received intimation from our friend and correspondent, Mr. Jameson, that a large case has been despatched, which we fully expect during the present month of October. The same letter contained skins of a beautiful Humming Bird, which although we are aware that specimens have been among the London dealers during the last month, it has not, we believe, been yet described or published; and as we are anxious to secure for Mr. Jameson the credit of discoveries he is so well entitled to, we now give the description, delaying any figure until our other specimens arrive, when we shall be able also to accompany it with that of the plants which the species chiefly frequent. It will also form the subject of an early illustration in Mr. Gould's splendid monograph of the family.

ORNITHOLOGY OF QUITO.

OREOTROCHILUS JAMESONII, JARDINE.

OCTOBER, 1849.

THIS beautiful species forms part of Mr. Gould's genus *Oreotrochilus*, all the known species of which inhabit the highest peaks of the Andes, bordering upon the limit of perpetual snow. Mr. Jameson writes, "It inhabits the rocky summit of Pichincha, and extracts its food from the flowers of *Chuqueraga insignis*. It is limited to a narrow zone, commencing immediately under the snow line, and extending about 500 feet."

Three fine specimens of *Oreotrochilus* have already been figured, all having a brilliant green gorget. The one before us resembling the others in the arrangement of the markings, has this conspicuous ornament of a rich purplish-blue; the bill is black; edge of the mandible at the base yellowish; the crown, cheeks, and nape, deep blue; back and upper tail-covers greyish-green, with partial reflections, and on the lower back and rump marked with fine pale undulations; wings brownish-black; tail, with the centre feathers, shining blackish-green; the others with the inner webs white; the tips and outer webs of the feathers black—the proportion of black increasing on those to the outside; and on the last or exterior, the greater part of the feather is black; beneath, the chin appears almost black; next the characteristic gorget of the form, of a rich purplish-blue, showing various shades according to the position. This is succeeded by a narrow band of deep black, as in those species already figured by Mr. Gould; the breast and sides of the belly are pure white; the under tail-covers and flanks greyish-black, the same colour running up the centre of the vent.

The entire length is 5.1; bill to forehead, 9; wing to end of longest feathers, 3.

NOTES ON THE STRUCTURE OF BIRDS.

MENURA.

IN a former number we figured a part of the intestinal canal of *Penelope cristata*, that it might be compared with a plate to be given afterwards of that of the Australian *Menura*.

On one of the plates of the present number, we have represented the cloaca and caecal appendages of both birds; and on the other, a portion of the intestinal canal of *Menura*. In the first, the difference in the structure of the caeca of *Penelope*, referred to at p. 27-3 of "Contributions" for 1848, is very marked. In *Penelope* they are very long and narrow in diameter, as in most rasorial birds; in *Menura*, on the contrary, they are extremely short, almost abortive.

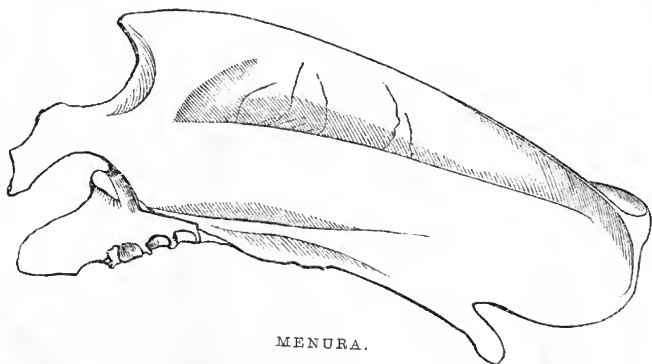
On our other plate devoted to the structure of *Menura*, we see the oesophagus wide and capacious, narrowing at about half its length, and again dilating to form the proventriculus (*a*) which is, a simple lengthened oval dilatation of about $1\frac{2}{3}$ or $2\frac{1}{3}$ in diameter. When inflated, it constricts before entering the very small but muscular gizzard (*b*). The pylorus externally seems to leave the gizzard near to the entrance of the proventriculus, and soon dilates into a duodenum (*c*) of moderate size. The gizzard, when laid open, showed considerable strength; the two muscles, when transversely cut, being nearly $\frac{1}{4}$ across. The epithelium is strong; the opposing surfaces deeply furrowed, and apparently possessing great power. The proventriculus, which appears externally more than usually

NOTES ON THE STRUCTURE OF BIRDS.

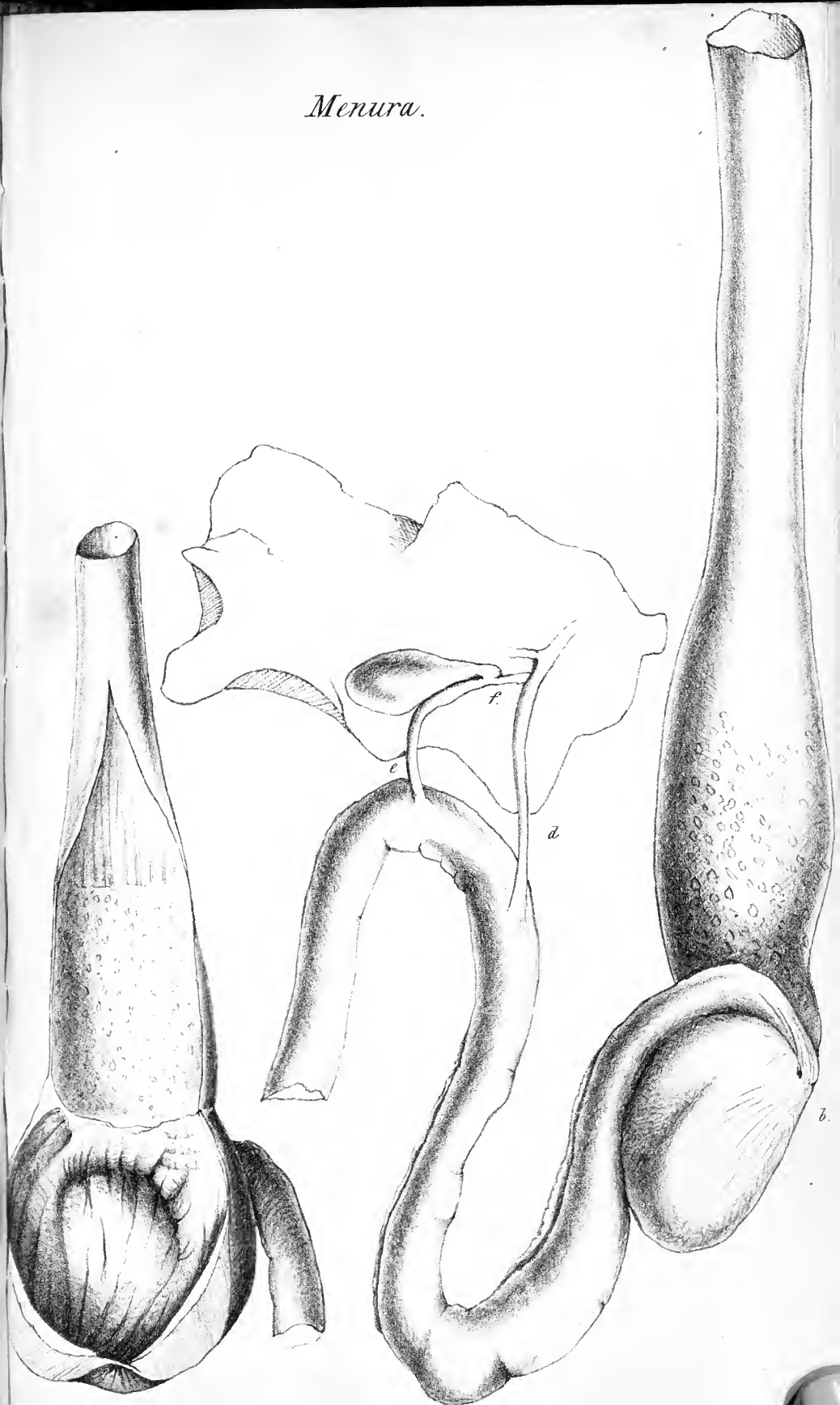
large, has the walls rather thin, but is thickly studded with oval glands; immediately above, we have the usually found plicæ, which continue upwards until the position of the true crop, where the walls become slightly thick and partially glandular.

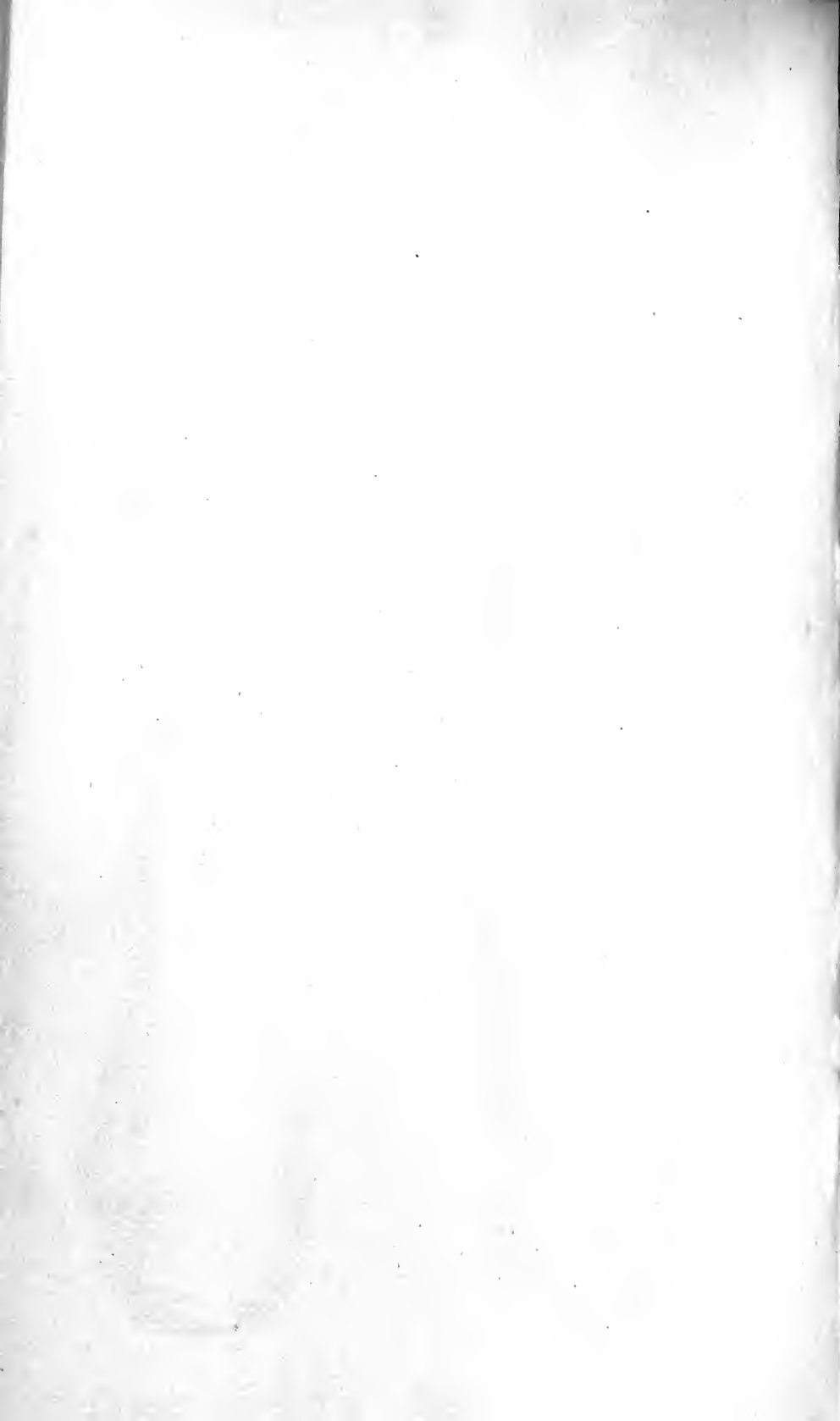
The gizzard contained remains of hard coleoptera (among others fragments of curculionidæ), one or two hard seeds, and bits of quartz. The entire length of the intestinal canal measured $\dot{5}1.6$.

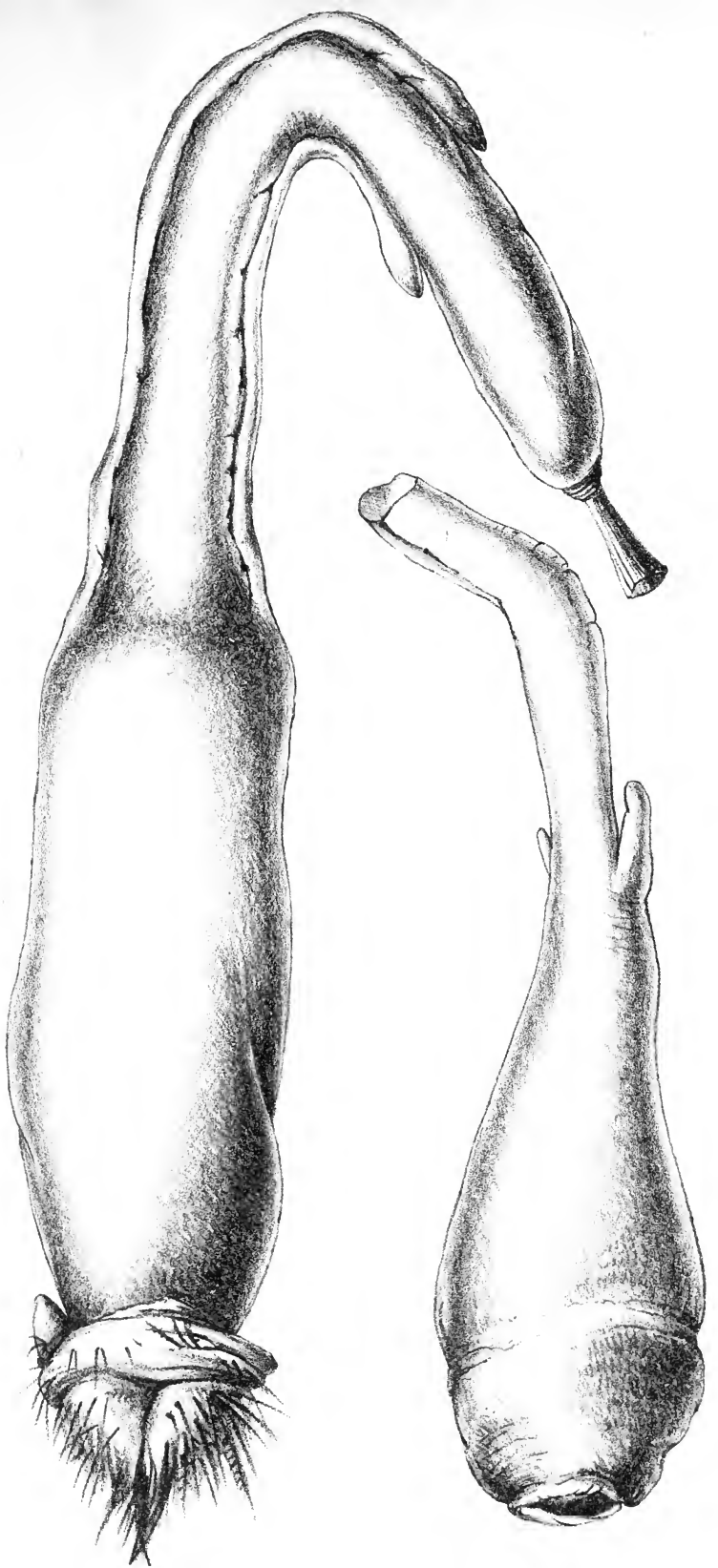
At the distance of about $\dot{7}$ from the external pylorus, the hepatic duct (*d*) is given off $\dot{1}.3$ in length, crossing the regular gall duct and terminating in two branches, which, in common with the regular gall duct, seem to communicate with a large sinus in the liver. About $\dot{1}$ farther on arises the real gall duct (*e*) curving abruptly at about an inch in length, to enter a pyriform gall bladder, and at the same time to send a continuous branch (*f*) to the sinus above alluded to. On inflating from the bladder, the communication is direct to the duct, the continuous branch not inflating until the other has been filled.



Menura.



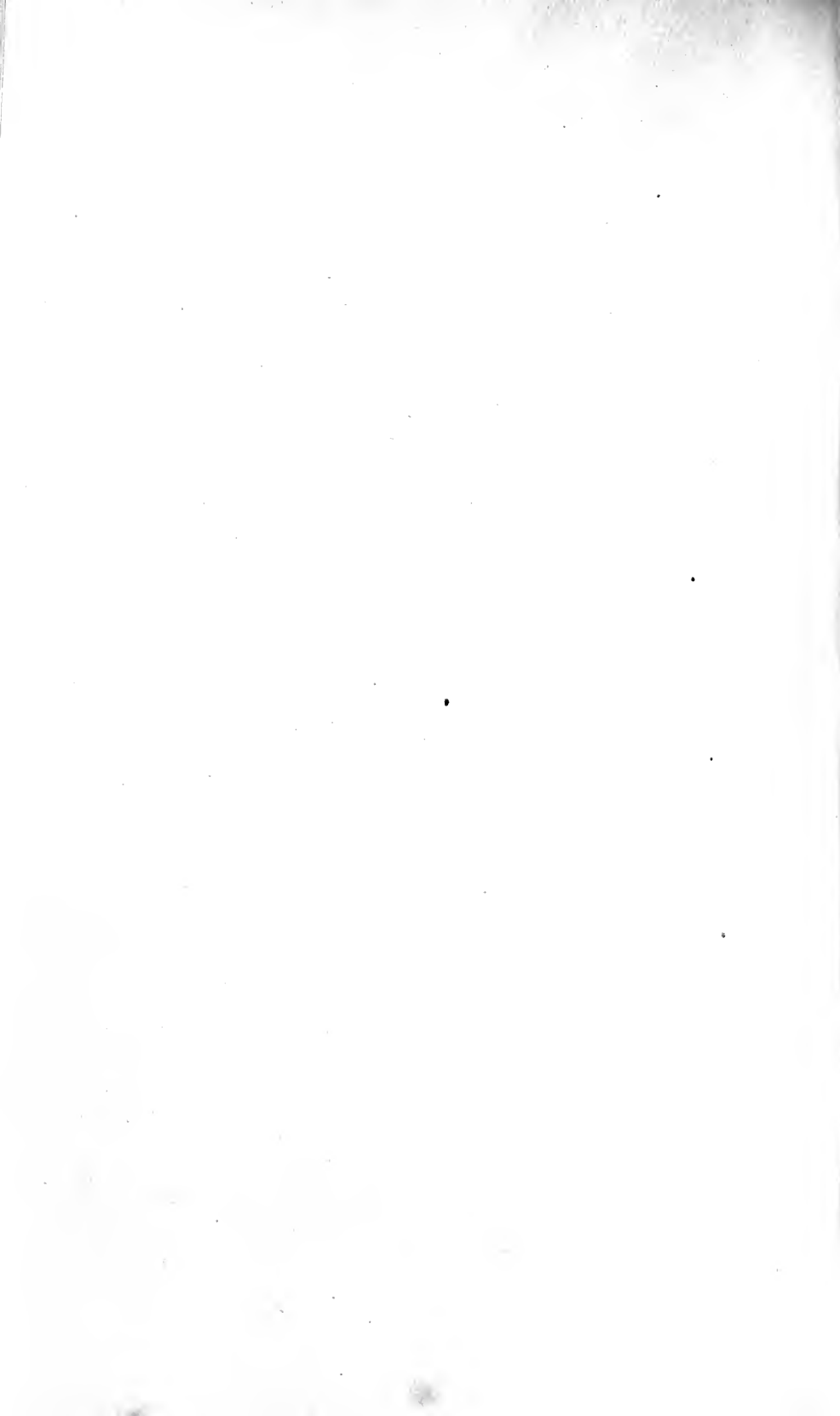




Penelope.

1849.

Menura.



NOTES ON THE STRUCTURE OF BIRDS.

ON THE FORM OF

THE POSTERIOR MARGIN OF THE STERNUM

OF THE

VULTURIDÆ.

By T. C. EYTON, Esq., F.L.S., &c.

MR. GRAY, in his excellent and most useful work, "The Genera of Birds," divides the *Vulturidæ* into the following genera:—*Gypætos*, *Neophron*, *Sarcoramphus*, *Cathartes*, *Vultur*, *Otogyps*, *Gyps*, and *Gypohurax*, excluding *Serpentarius*, which he classes with *Circus*, but which must be again restored to the *Vulturidæ*, the whole skeleton being that of a true vulture. Of the above nine genera, I have obtained the skeletons or made drawings of those of seven. On examining the accompanying plate, the first six appear to resolve themselves into a consecutive series, thus 4, 6, 5, 3, 1, 2. No. 7 appears at first sight not to belong to the series, but upon comparing it with No. 2, we shall find some points of resemblance.

In figure 2, representing the posterior margin of the sternum of *Cathartes aura*, the hyposternal portion is elongated laterally; the drawing was taken from the skeleton of a young bird, and it is probable that this process would be more developed in an older specimen. The posterior part of the entosternal portion is also elongated; not so much so, it is true, as in *Serpentarius*, figure 7, but more so than in the other genera of vultures. *Serpentarius* differs however from *Cathartes*, in not having any orifices on each side of the sternum, but this we find also to be the case in *Sarcoramphus*, figure 4. I have given, for the sake of comparison, outlines of four other forms of the posterior margins of the sternum in the order *Raptores*, viz.—*Aquila chrysaetos*, figure 8; *Circus aeruginosus*, figure 9; *Nyctia nivea*, figure 10; and *Polyborus braziliensis*, figure 11; to none of these, with the exception of the last, does *Serpentarius* present the least resemblance; the

NOTES ON THE STRUCTURE OF BIRDS.

whole osteology of *Polyborus*, indeed, comes so near that of the vultures, that I have some doubts whether that genus ought not to be arranged with them instead of with the hawks. There is, however, a resemblance to the hawks in the form of the posterior margin, in the central or entosternal portion not being prolonged beyond the hyposternal or lateral portions, or, in other words, beyond the general line of the posterior margin. In all the vultures I have examined this is the case, distinguishing their skeletons at once from that of the other *Raptores*. On this account, therefore, I shall for the present exclude the *Polyborina* from the true *Vulturidæ*.

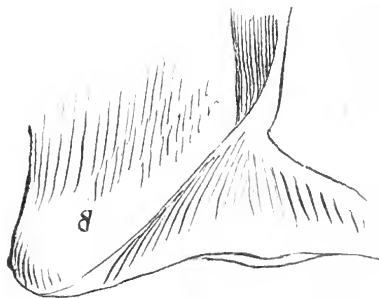
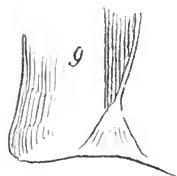
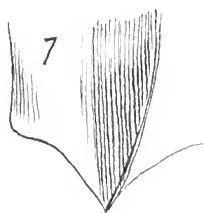
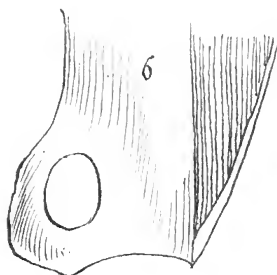
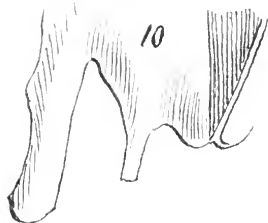
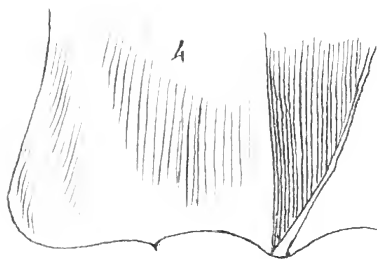
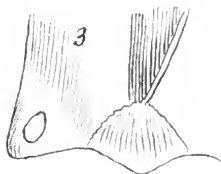
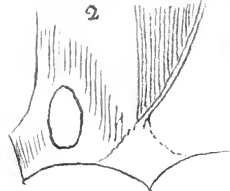
Having now pointed out my reasons for including *Serpentarius* among the *Vulturidæ*, I shall endeavour to show, in a tabular form, how that family may be arranged by the forms of the posterior margin of the sternum only:—

VULTURIDÆ.

The Entosternal portion not prolonged backwards beyond the Hyposternal portion:—

Keel not prolonged to the posterior margin of the Entosternal portion	{	GYPÆTINÆ.....	{	Lateral orifices large—
		<i>Gypætos</i>		Hyposternal portion slightly elongated laterally.
		CATHARTINÆ ...	{	Lateral orifices of moderate size—Hyposternal portion much elongated.
<i>Cathartes</i>				
	{	NEOPHRONINÆ...	{	Lateral orifices small—
<i>Neophron</i>		Hyposternal portion not elongated.		
<i>Gypohierax</i> (?)				

Keel prolonged to the posterior margin of the sternum	{	SERPENTARINÆ	{	Without lateral orifices—
		<i>Serpentarius</i> ...		Entosternal portion much elongated.
		VULTURINÆ.....	{	With lateral orifices—
<i>Vultur</i>	Entosternal portion very slightly elongated.			
<i>Gyps</i>				
	{	SARCORAMPHINÆ	{	Without lateral orifices—
<i>Sarcoramphus</i>		Entosternal portion very slightly elongated.		



1 *Gypaetos barbatus.*

2 *Cathartes aura.*

3 *Nephron peregrinus.*

4 *Sarcoramphus gryphus.*

5 *Gyps fulvus.*

6 *Vultur cinereus.*

7 *Serpentarius reptilivorus.*

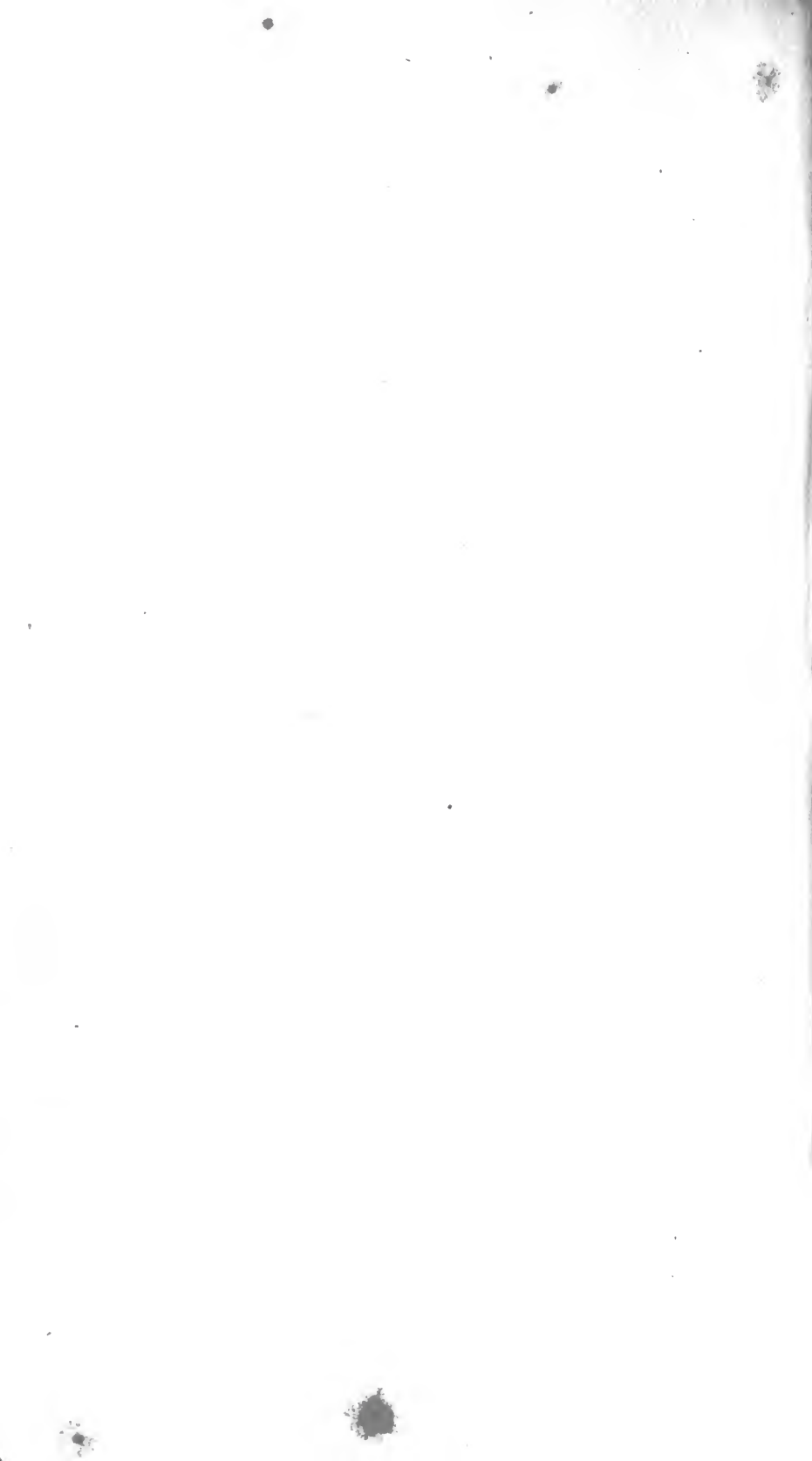
8 *Aquila chrysaetos.*

9 *Circus aruginosus.*

10 *Nyctea nivea.*

11 *polyborus brasiliensis.*

Decr 1849.



OBSERVATIONS

ON THE

SYSTEMATIC POSITION OF THE GENUS *ARTAMUS*, VIEILLOT.

THIS very curious and interesting form, for it possesses modifications of structure that has rendered its position in our systems questionable, was originally known by one species, the *Lanius leucorhynchus* of Linnæus, an inhabitant of the Philippine Islands. Another was subsequently found in Continental India; while the discovery of New Holland, and the various expeditions to the interior of that continental island, have now augmented the genus to a considerable number, some of which exhibit a greater variety of form, and less uniformity in the colouring of the plumage, than those with which we were previously acquainted.

By some of our latter systematists (Kaup.) the *Artami* have been considered as the fissirostral type among the *Conirostres*; but by the greater number they have been arranged among the *Laniadæ*, and lately with one of the flycatching families of that group, the *Dicrurinæ* or Drongo Shrikes. They are acknowledged to be at least a "representative" of some portion of the *Fissirostres*. It is there we would wish at once to remove them; and if we shall attempt now to change their arrangement, we trust we shall be able to bring forward some grounds for the foundation of that opinion.

It has frequently been found, that names given provincially, or by natives and settlers, or by those who at the time looked only at some resemblance, and not to scientific affinities, are often correct indications of the position and real situation of the species. The *Artami* have received the titles of "Wood Swallows" from the colonists of Australia—"Swallow Shrikes" from the continental ornithologists. There are two ways of attaining to the

same result; the one is by an examination of structure, the other by the knowledge and comparison of the habits of the individuals. To procure authentic information of the latter is generally the most difficult; but in the present instance, besides the notices of some of the earlier known species, we are, thanks to the enterprise of Mr. Gould, in possession of a considerable store of materials which can be relied upon, and we shall shortly run over these, comparing them afterwards with what we know of the *Hirundinide*. They will be found to coincide remarkably.

Sonnerat, in the "Voyage a la Nouvelle Guinée," relates of the true *Lanius* (*Artamus*) *leucorhynchus* there described.

"Cet oiseau vole avec rapidité, et en se balançant en l'air, comme les hirondelles. Il est ennemi du corbeau; et quoique beaucoup plus petit, il ose nonseulement se mesurer avec lui, mais même il le provoque. Le combat est long, opiniâtre, dure quelquefois une demi-heure, et finit par la retraite du corbeau; peut-être méprise-t-il cet ennemi trop foible, qui ne fait que le harceler, et n'échappe à ses coups que par la facilité qu'il a à les esquiver, à s'éloigner et à revenir en prenant son avantage."—*Sonnerat Voy. a la Nouv. Guin.* iii. p. 56.

The account given of the habits of these birds by Mr. Gould will be read with much interest, and on comparing it with the general manners of our most common swallows, a remarkable similarity will be noticed. Writing of the "wood swallow," *A. sordidus*, he says, This, "besides being the commonest species of the genus, must, I think, be rendered a general favourite with the Australians, not only from its singular and pleasing actions, but by its often taking up its abode and incubating near the houses, particularly such as are surrounded by paddocks and open pasture-lands skirted, by large trees. It was in such situations as these in Van Dieman's Land, at the commencement of spring, that I first had an opportunity of observing this species; it was then very numerous on all the cleared estates on the north side of the Derwent, about eight or ten being seen on a single tree, and half as many crowding one against another on the same dead branch, but never in such numbers as to deserve the appellation of flocks. Each bird appeared to act independently of the other; each, as the desire of food prompted it, sallying forth from the branch to capture a passing insect, or to soar round the tree and return again to the same spot; on alighting

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it repeatedly throws up and closes one wing at a time, and spreads the tail obliquely prior to settling. At other times, a few were seen perched on the fence surrounding the paddock, on which they frequently descended, like starlings in search of coleoptera and other insects. It is not however in this state of comparative quiescence that this graceful bird is seen to the greatest advantage; neither is it that kind of existence for which its form is especially adapted; for although its structure is more equally suited for terrestrial, arboreal and ærial habits, than that of any other species I have examined, the form of the wing at once points out the air as its peculiar province; hence it is, that when engaged in pursuit of the insects which the serene and warm weather has enticed from their lurking places among the foliage to sport in higher regions, this beautiful species, in these ærial flights, displays its greatest beauty while soaring above in a variety of easy positions, with white tipped tail widely spread." Another very extraordinary and singular habit of the bird, is that of clustering like bees on the dead branch of a tree. Mr. Gilbert thus writes to his employer from Swan River. "The greatest peculiarity in the habits of this bird, is its manner of suspending itself in perfect clusters, like a swarm of bees; a few birds suspending themselves on the under side of a dead branch, while others of the flock attach themselves, one to the other, in such numbers, that they have been observed nearly of the size of a bushel measure." Of *A. minor*, Mr. Gould writes, "The present bird is still more ærial, a circumstance indicated by the more feeble form of the foot, and the equal if not greater development of the wing. During fine weather, and even in the hottest part of the day, it floats about in the air in the most easy and graceful manner, performing in the course of its evolutions many beautiful curves and circles, without the least apparent motion of the wings, whose silvery whiteness as seen from beneath, together with the snowy tips of its wide spread tail, offer a strong contrast to the dark colouring of the other parts of its plumage." The young "were constantly being fed by their parents, who were hawking about in the air over and around the trees, while the young were quietly perched on some dead twig." And again, we have observations on the habits of *A. leucopygialis*:—"In the Christmas week of 1839, at which time I was on the plains of the interior, in the direction of the Namoi, the young progeny of

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the second brood were perched in pairs or threes together, on a dead twig near their nest. They were constantly visited and fed by the adults, who were hawking about for insects in great numbers, some performing their evolutions above the tops and among the branches of the trees, while others were sweeping over the open plain with great rapidity of flight, making in their progress through the air the most rapid and abrupt turns, at one moment rising to a considerable altitude, and the next descending to within a few feet of the ground, as the insects of which they were in pursuit arrested their attention. In the brushes, on the contrary, the flight of this bird is more soaring and of a much shorter duration, particularly when hawking in the open glades, which frequently teem with insect life. When flying near the ground, the white mark on the rump shows very conspicuously, and strikingly reminds one of the house marten of our own country."

Captain Sturt, in his last arduous expedition into Central Australia, writes of *Artamus sordidus*, "The flight and habits of this bird are very like those of the swallow tribe. They huddle together and roost, selecting a flat round stump, round the edge of which they sit, with their heads inwards, and presenting a singular appearance; or else they cling together, to the number of thirty or forty, on a branch, like a swarm of bees. They were seen in every part of the interior, over the whole of which they appear to range."

In these observations we find portrayed the exact habits of many of the swallows. Like them, the *Artami* feed almost entirely on the wing, sweeping, soaring, or skimming over the surface of the country, and in pursuing a similar prey, of necessity pursuing similar evolutions; or if we do find some species selecting a different food, or living partially upon berries, we have parallel instances among the strong-billed American swallows and others. The purple marten occasionally feeds on berries; and Wilson tells us, that the little marten, *Hirundo bicolor*, "for some time before their departure, subsist principally on the myrtle berries (*Myrica cærifera*), and become extremely fat." The food of the more slender-formed *Steatornis* also tells us, that insect support is not a peculiar though it is a general character of the *Fissirostres*. In that family also, the weak feet, ill formed for walking, seldom permit any of the members to feed upon the ground. In the *Artami*,

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the feet are proportionally stronger; and we have seen that these birds sometimes feed "starling like." The swallows are more awkward; but those of Britain frequently settle and pick up insects from bare ground, or about parcels of dung on roads; and in a note to Wilson's North American Ornithology, we stated, that several hundreds of the *H. riparia* were collected upon the flat and sandy beach of the Solway, upon a space not exceeding two acres, feeding on a small fly that had apparently come newly to existence, and covered the sands in immense profusion. "Horsemen,"* writes White, "on wide downs, are often closely attended by a little party of swallows for miles together, which plays before them and behind them, sweeping around and collecting all the skulking insects that are roused by the trampling of the horses' feet; when the wind blows hard, without this expedient, they are often forced to settle, and pick up their lurking prey." Sonnerat's description of the daring of *Artamus*, and its attacks on all intruders, is characteristic also of the swallows. "The swallow," says White, "probably the male bird, is the excubitor to the house martens and other little birds, announcing the approach of birds of prey. For as soon as a hawk appears, with a shrill alarming note he calls all the swallows and martens about him, who pursue in a body, and buffet and strike their enemy till they have driven him from the village, darting down from above on his back, and rising in a perpendicular line, in perfect security;" and Wilson relates, "The purple marten is the terror of crows, hawks, and eagles. These he attacks wherever they make their appearance, and with such violence and rapidity, that they instantly have recourse to flight." Mr. Gilbert's description of the manner in which *A. leucopygialis* feeds its young, is exactly that of our common swallow. Every observer must have observed the pairs, or threes, or more, of the young swallows, perched on some dead branch, or wall, or railing, or barn roof, and fed by the parents; and Mr. Gould's figure of the young is a counterpart of what may be seen every autumn in this country. The familiarity of swallows about dwelling places is also great; and they abound and are favourites, like the Australian birds, from similar causes. The presence of man and animals collects insects; and the

* P. 170, quarto edition.

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annoyance of these tiny tribes hinders molestation to the birds, which soon take up an abode where they receive at the same time protection and food.

Most of the *Artami* migrate, a fact universal among the swallows, and the manner of performing it simultaneously appears similar. "*A. sordidus*," again writes Mr. Gould, "was very numerous in the town of Perth until about the middle of April, when I missed it suddenly; nor did I observe it again until near the end of May, when I saw it in countless numbers, flying in company with the common swallows and martens, over a lake about ten miles north of the town; so numerous in fact were they, that they darkened the water as they flew over it." The migration was, in fact, performing at the same time, and in company by all these birds. It is now known in those countries where some attention has been given to the habits of animals and birds, that swallows, after assembling and preparing, move off in large flocks, and have been met with in vast numbers by vessels at sea, when thus on their journey. A pamphlet published at York in 1815, describing the departure of the swallows at Rotherham, tells us, that "their numbers became daily augmented, until they became a vast flock;" that "on the morning of the 7th October, their mighty army broke up their encampment, debouched from their retreat, and rising, covered the heavens with their legions;" and we have ourselves often witnessed their autumnal congregations, and sudden simultaneous departure. The economical habits are also in many respects remarkably alike. How often do we see our native house swallow, on a close or damp day, perched in rows on the projecting ledge of some building, on a rail, or on some bare branch of a tree, resting or pluming, "sallying forth to capture a passing insect," and after a short excursion, returning to the same perch, regaining its place with a repeated motion of the wings from and to the body. The young, possessing less strength of wing, often huddle together, when a like solicitude is displayed by the parents, both in feeding, and in attempting to make them exert, or as it were, practice themselves in flight. The remarkable habit of the *Artami* clustering like bees to the dead branch of a tree, remains without any suggestion as to the cause by our intelligent author; and the reason is not mentioned, or whether it took place particularly soon before migration, nevertheless, it is a habit not to be

lost sight of, a tendency to huddle together, or "cluster," being prevalent among the *Hirundinidæ*; and this is just another link in the chain of alliance. The word "clustering" has been used by many writers in describing the manners of the swallows. "I was travelling, and out early in the morning," writes White of Selborne, "and I could discern, as the mist began to break away, great numbers of swallows, *clustering* on the stunted shrubs and bushes, as if they had roosted there all night." Sir Charles Wager relates, that in one of his voyages home, a great flock of swallows settled on his rigging; "every rope was covered with them; *they hung on one another like a swarm of bees.*" When roosting, this propensity is peculiarly observable; and the vicinity of water seems the most favourite resort after incubation has been completed. We have frequently observed numbers take up their retreat in alder or willow bushes fringing a river side; while in the south, reed beds and willow holts are the favourite resort. They there cluster together, so that "the reeds are bent down even to the water by their weight." In another pamphlet, dated Wilts, 1780, we have the account of a party, who went with torches to a little isle in the Thames, and in less than half an hour brought ashore fifty dozen. "The branches of the trees were loaden with them in such a manner, that they had nothing more to do than to draw them through their hands, the birds never moving till they were secured." The account of the "swallow trees" of America, where thousands of the *Chatura pelagica* roost in the hollow boles, clinging and clustering around the inside, may be quoted as another instance of this habit being frequent in the family—an instinctive provision for warmth, after the duties of incubation have been completed, and the advance of the season may have decreased the heat.

In the outward form and structure of these birds, we have nothing to militate against their admission among the *Fissirostres* as an aberrant form. The flight and attitudes are all swallow-like or resembling the bee-eaters; and the colours of the plumage equally assimilate with these two forms much more than with the shrikes or drongos. The gape is comparatively wide, the bill dilated at the base, and its strength or robust form is not greater than in *Podargus* or *Eurystomus*, or even than the strong-billed American swallows, forming the genus *Progne* of Boie. The tarsi and

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feet, if compared with those members in the *Fissirostres*, are strong and powerful; but if looked at in regard to the size and proportions of the birds, there is a shortness and want of development observable, which points out, that they are not essential to any part of the economy of individuals. The claws are strong and hooked, and fitted for giving support by clinging; but as yet, we have no account of the place or manner of roosting employed by the *Artami* when not breeding.

The internal structure of foreign birds, particularly the smaller species, is often very difficult to examine correctly, from the destruction of the parts by spirit or preserving liquor; but however mutilated, whatever notes can be obtained of their comparative anatomy, is worthy of being recorded. From a specimen of *A. sordidus*, presented to us by Mr. Gould, the following notes were taken. It had been preserved in salt, and having been killed with large shot, was a good deal injured:—The sternal appearance of the body, when skinned, gives an idea of power; and although slightly rigid, from the salt in which the birds were preserved, appeared muscular. The general muscular system, nevertheless, except when seen in this aspect, and those connected with flight, together with the skeleton, are weak. The sternum has the keel considerably arched, is narrow at its anterior portion, dilating to the posterior edge, and there cleft for one-third of its length by a wide oval fissure. It approaches to the form of the same part in *Trogon* and *Prionites*, except in having only the one fissure. The upper trachea, with the lateral muscles dividing almost at their origin, and sending a strong lengthened slip to be inserted by expansion into the skin; lower trachea bound down to the opening of the os furcatorius, by a rather strong ligament; sterno tracheal muscles extremely weak; tongue about two-thirds of the length of the bill, large, slightly fringed at the tip.

Stomach of a lengthened oval form, walls thin, the muscular part weak; the epithelium of a thin horny consistence, the rugosities not much developed; it enters the pyloric orifice, and is separated at the upper part from the proventriculus by a fringed edge, the latter perhaps caused by maceration; proventriculus very slightly glandular, the entrance from above without plicæ. The stomach was completely distended with insects, principally minute coleoptera, and of these the thorax, elytra, or legs, remained; no

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transparent wings could be discovered; the skin of a single large soft-like larva was observed. The insects must either have been powerfully triturated by the action of the stomach, or much broken by the bill of the bird. Cloaca apparently extending for an inch in length, oval, slightly dilated, but not very wide; also filled with the hard parts of insects, passing through in that state.

In *Artamus leucorhynchus*, which Mr. Blyth kindly remitted to us from Calcutta in spirits, the structure generally agreed with that of the Australian species.

In the muscular arrangement of the sternum and pectoral development of these birds, compared with that of the *Herundinidæ*, there is no great difference, according to their relative size, though, in comparison with *Cypselus*, where there is immense power, it is much weaker, particularly as regards the pectoral muscles. In like manner, the skeletons of *Hirundo* and *Artamus* resemble each other, differing from others of the *Fissirostres* in the structure of the sternum. In *Cypselus*, the sternum is remarkable for the depth of its keel, and in the broad posterior margins being entire, and without any fissure, allowing no space to be wanting for the support of the powerful muscles used in flight.* In *Trogon*, *Halcyon*, *Prionites*, *Merops*, *Coracias*, &c., the sternum is characterized by less elevation of keel, and by great breadth of the posterior margins, but which have two fissures of considerable extent. Between the swallows, again, and *Artamus*, except in regard to size, there is a great similarity; both have an elevated keel—both are nearly of equal proportional breadth—and in both the posterior margin has only one fissure, proportionally longest in the swallow. When all these parts are compared with those of the *Fringillidæ*, the marked difference is in the narrowness of the sternum of the latter, particularly at its posterior end.

In the muscles of the lower larynx, the sterno tracheals are as in *Hirundo*, very weak and slender.

The tongue resembles that of the *Fissirostres*, while the structure of the intestinal canal is essentially that of an insectivorous bird, more so indeed than in *Hirundo*. The stomach, in *A. leucorhynchus*, is stronger and more muscular than in *A. sordidus*; in

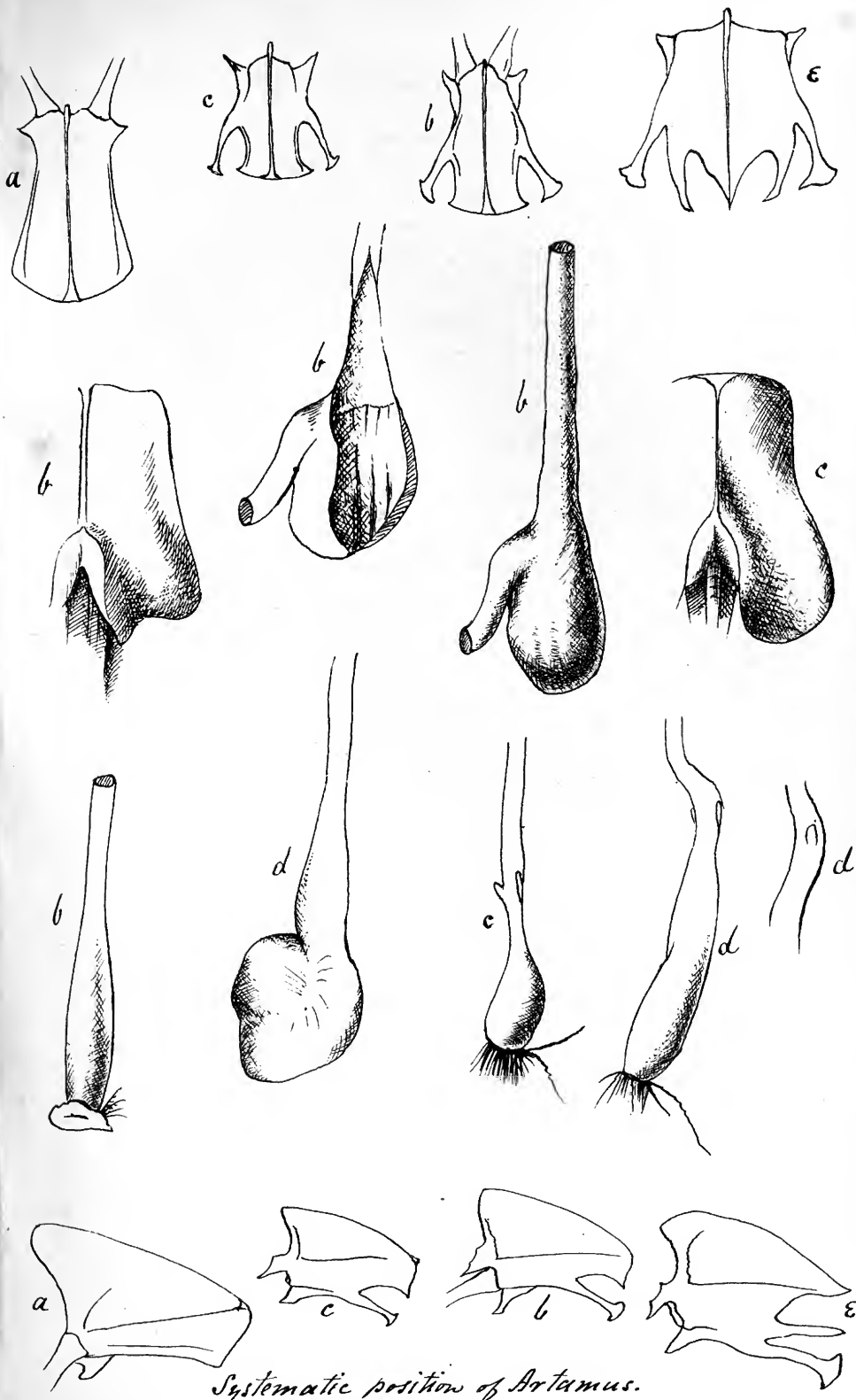
* It is curious, that the nearest resemblance to the sternum of the Swift is found in that of *Procellaria pelagica*—the more curved or boat-like appearance of which, however, tells that it belongs to an aquatic type.

the former it was also crammed with insects *Coleoptera*, *Diptera* and other winged insects; in both it is less gizzard-like than in *Hirundo*. It is in fact more a bag or pouch than a gizzard, the walls comparatively thin, the proventricular dilatation very slight, and there is no indication of any crop as in *Fringilla*. In comparison with the organ in *Trogon*, *Prionites*, and *Halcyon*, it is more fissirostral than in the two first, and approaches closest to that of *Halcyon*, which may be accounted for by the food of the latter being more insectivorous than that of either of the two first. The termination of the canal is in a gently dilating cloaca, the cecal appendages being merely rudimentary, thus agreeing with *Hirundo*.

From these comparisons, then, we are led to the opinion, that the position hitherto assigned to *Artamus* is erroneous, and that its proper station is among the *Fissirostres*, probably immediately after or following the swallows, and leading by them to the bee-eaters, &c., by means of *A. superciliosus*.

Reference to Plate.

- a* Cypselus.
- b* *Artamus sordidus*.
- c* *Hirundo rustica*.
- d* *Artamus leucorhynchus*.
- e* *Trogon*.



Systematic position of *Artemus*.
Oct. 1849.



MONOGRAPH OF THE FALCONIDÆ,

SYSTEMATICALLY ARRANGED BY

DR. T. T. KAUP.

[OKEN'S *ISIS*, a German periodical of many years standing, containing, among information of very great interest, a series of valuable ornithological papers, has, we believe, given way to the unsettled state of the continent, and for the present at least has ceased to appear. Dr. Kaup has sent us his Monograph of the *Falconidæ*, translated by himself from that Journal of 1847, as improved in 1848. This paper, as well as Dr. Kaup's classification of birds, is very little known among the ornithologists of this country; and although we cannot subscribe to all the views, however ingenious, detailed in the Monograph, we nevertheless think, that by making it better known, we shall lead to the study and development of those principles which bring us nearer to a true natural arrangement.]

INTRODUCTION.

I HAVE written this Monograph only with a view to prove, by a special exposition, the principles which I have expressed in my classification of mammalia and birds, as a more detailed investigation will enable, and be perhaps more likely to induce, men of science, to enter into a closer criticism than the exposition of an idea, only but generally indicated, could do. How far I have succeeded I must leave to time and to impartial criticism to decide. I made choice of the *Falconidæ*, because this family is very numerous in its members; I mean, that the greater number of them still exist, and that there are no such blanks in it as in the other families of the *Accipitres*.

In examining this family, it became obvious that a large number of *genera* could not remain as such, but must only be considered as

MONOGRAPH OF THE FALCONIDÆ,

subgenera; among these are the following:—*Erythropus* = *Tinnunculus*; *Hypotriorchis* and *Hierofalco* = *Falco*; *Strigiceps* = *Circus*; *Gampsonyx* = *Elanus*; *Limnaëtus* and *Spizastur* = *Spizaëtus*; *Micronisus* and *Meliërax* = *Astur*; *Morphnus*, *Thrasaëtus* = *Asturina*; *Herpetotheres*, *Gymnogenys*, and *Spilornis* = *Circactus*; *Ichhyaëtus* = *Pandion*; *Haliastur* = *Haliaëtus*; *Archibuteo* = *Buteo*; *Baza* and *Cymindis* = *Pernis*; *Daptrius* and *Milvago* = *Ibicter*.

As nominal subgenera, the following have resulted:—*Pœciloptyryx* = *Ictinia*; *Hydroictinia* = *Milvus*; *Craxirex* = *Astur*; *Buteogallus* = *Rupornis*; *Spizigeranus* = *Rupornis*; *Brachypterus* = *Herpetotheres*; *Avicida* = *Baza*.

Having indicated five fundamental types always recurring in the families of *Accipitres*, as well as in the subfamilies and genera of *Falconidæ*, I have shown how, by a misunderstanding of these, all ornithologists have been led to make use of them in the most diversified ways, in order to connect the genera and subgenera. Since they have not as yet been arranged under their true genera in any work on natural history, it may be conceived how Vigors and Swainson were not able to succeed in carrying through the quinary system; not to mention that their arrangements were not founded on any consistent basis, since they had not comprehended the well-founded theory first proposed by Oken.

By my investigation of the *Falconidæ*, I think I shall also show on what weak foundations our present systematizing rests, and how the use of analogies, in order to connect families, subfamilies, genera, and subgenera, opens the way to arbitrary arrangement; and how, for instance, the existing *Falconidæ* might be arranged in a thousand different ways without exhausting it. It is not, however, my intention to show here how the families, subfamilies, genera, and subgenera, may be connected according to erroneous analogies, since this has been more than sufficiently shown already, by ancient as well as modern ornithologists.

In a fit, as I think, of just chagrin, I gave a prescription (in the *Isis*, 1847, p. 47) how many hundreds of systems of the *Falconidæ* may be contrived, which all might present some show of being founded on nature. However, I rather doubt whether this ironical treatment will save ornithology from new systems, in which all forms will be knit together, like a string, by wrongly used analogies,

though the authors of such systems might anticipate that their arrangements harbour death in the core, and will enjoy but a short lived existence.

One of the principal mistakes in ornithology, as I already observed, is, that subgenera are considered as real genera, and that on their first appearance they are not arranged under their true genera. The consequence of this mistake is, that the subgenera which belong to but one large genus, are torn asunder, and put into a variety of subfamilies, according to wrongly conceived analogies.

Thus the subgenera occasion the greatest confusion, and thus are particularly apt to puzzle the student of ornithology, who enters into science with a true sense of nature. If, however, the subgenera are arranged at once under their respective true genera, then they are an advantage to science, for they facilitate the survey, and make it possible to give short and precise distinctive characters to the species. Thus the mistake is avoided of marking the species of one part of the globe with the characteristics of subgenera, as has been done by Count Kaiserling and Blasius in their works, which in other respects possess much merit. How far I have done well to dissect genera like *Circus* and *Nisus*, &c., into their minutely varied subgenera, I must leave to be decided. I was partly obliged to do so, because other genera, as, *Circaetus*, *Pernis*, *Elanus*, *Haliaetus*, *Pandion*, *Ibicter*, &c., are divided into subgenera already known, whose characteristics are more obvious, though they are of no more consequence than those of the subgenera of *Circus* and *Nisus*. The characters indicated by me are, however, by no means difficult or minute, and may be easily recognised.

If I made *Circus cinerascens* and *pallidus* into a subgenus, I did it not only on account of the short secondaries (*arm wings*), the long primaries (*hand wings*), and the small number of emarginated quills; but because, according to my principles, the *Naucle-rus* or swallow type is expressed by wings thus constituted. That both species get only in their third year the plumage of the old ones, and that the plumage of the middle age is so different from both, I consider as yet but as a secondary character, which, however, may contribute to make us consider this little group to be perfectly characterized.

By similar characters, as essential, the other subgenera are respectively distinguished. But by writing always *Circus cineras-*

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cens, and not *Glaucopteryx cinerascens*, I mean that I shall never approve of giving to these subgenera the importance of true genera. If this should be done (and with some nicely distinguished subgenera, viz. — *Herpetotheres*, *Gymnogenys*, *Spilornis*, *Circaëtus*, *Poliornis* of the genus *Circaëtus*, &c., it has been done long ago) then the now generally adopted sense of genus would be overthrown again. The subgenera, as made use of by me, will prove an easy means to men of science and research, and will bear out by their characters the repetition of their five different types.

Whether my opinion and its consequences, viz., that each family is to be considered as one whole, confined to itself, and that consequently no double or similar names of species are to be tolerated in it, will hold good, must be left to ornithologists of superior intelligence to decide. With respect to the *Falconidæ*, I was obliged to give to several species new names on that account. Such a consistency offers the advantage, that each species of a family, when speaking of it, may be pointed out accurately without naming the genus, and yet every mistake be avoided.

Against my way of mentioning the authors, since I always indicate the discoverer of each species after its name, even if he has not put it in its proper genus, warm objections have been urged by my worthy and learned friend, Mr. G. R. Gray, who is so highly distinguished by his multifarious knowledge; and I must own, that my way of writing may be apt to lead astray, not scientific men, but beginners among zoologists, since they will vainly search in ancient authors for genera like *Hierax*, *Harpagus*, &c.

Much sensation has been already occasioned by my having dethroned the *Accipitres*, those birds of heraldry, from the high station which they have occupied since the days of yore, and by my placing them where nature meant and made them to stand.

All objections, however, may be easily refuted by asking the simple question. You zoologists (who, imitating Linnæus, have placed the *Accipitres* and the ugly vultures at the head of all birds), why do you not give to the cats and the tiger the first place at the head of all mammalia, as Pallas proposed to do? If the *Psittacidæ* are analogous to the *Primates*, then the *Accipitres* cannot be so too. The man who lays down a system, cannot be induced either by the beauty of the form, or by the courage, the voraciousness and cruelty, which is the nature of some *Accipitres*, to assign to them

the first rank among birds. This station has been given to them partly on the ground of a wrong idea of analogy, because the *Falconinæ* of the *Falconidæ* reproduce the *Psittacine* type, though, according to their whole nature, they belong to the fourth stem; and perhaps, also, there may be something of a slavish feeling, which is apt to consider blood-thirsty tyranny and the wrath of destruction, as marks of grandeur, which may have influenced the making of this arrangement.

Were I to comply with the common usage, were I to place the *Aquilinæ* at the end of the *Accipitres*, and force *Pandion* to stand the last of them, in order to arrive at the rapacious group of *Lestris*, furnished with a cere; or did I close with the *Gypaëtus*, to connect them by *Tachypetes* with the *Pelicanidæ* and *Natatores* as they are called, there would then be a better prospect of my arrangement finding some acceptance. I cannot, however, follow the beaten track, because I consider the *Accipitres*, like the *Longipennes*, &c., to constitute a particular sub-order of themselves, in which the types reappear in the families, subfamilies, &c., and because, by pursuing this course, science would come to a stand still and become unfit for farther improvement. While I must blame the attempts which have been made to connect birds into one series, by means of analogous forms, in like manner I must think it altogether erroneous if men, distinguished by genius and science, endeavouring to systematize on a large scale, think, that either by anatomy, or some exterior characteristic alone, they have found the "philosopher's stone," and that by means of a large order like the *Ornithes* (*Passeres*), as they call them, they may make divisions of large groups. These enemies to sound system, of whom some recent renowned anatomists, as T. Müller, &c., are the chief, are forming a school, which, alas! seems to condemn all those who think they have reason for pursuing an opposite course.

If from the existence or the want of some small muscle of the lower larynx, anatomists think they have reason to exclude from the order *Ornithes* all the birds which are not possessed of the apparatus of singing muscles, and to separate the *Cypseli* from the *Hirundinidæ*, *Ampelis* from *Bombycilla*, *Pitta* from the *Turdinæ*, &c., &c., then I must confess, that from such a method consistently pursued, the most artificial system will result. Such projects are truly worthy of Professor Müller's discreet expression, "Where is

a fish swimming" (or a bird flying), "which sets not at nought all our systems?"!

If all men of science who attribute so much importance to a small and partial characteristic, would put the question to themselves, What renders a bird a bird? What constitutes the *Ornithes* to be *Ornithes*?—they would easily have found, that the apparatus of the singing muscles is a characteristic of a true bird, and of the whole class, for the same characteristic occurs in no other classes. If, consequently, they would farther have reasoned, that all *Ornithes*, possessed of this apparatus, must necessarily represent the noblest type of a bird, either as a family, subfamily, or genus, I believe they would never have thought of tearing asunder forms so intimately connected by their main characters. The *Cypseli*, with their enormous jaws, short secondaries, and long quill-feathers, with their four toes mostly turned forward, and sharp claws; with their great voracity, the inartificial structure of their nests; surely these do not represent the singing bird in the family of *Hirundinidæ*; but yet to separate them altogether on that account, and because they want the apparatus of the singing muscles, cannot enter the mind of any one whom scholarship has not deprived of all sense of natural order. Still more, to unite the *Cypselinæ* as an order of the *Macrochires*, Nitzsch, with the *Trochilidæ*, as my honoured friend Sundeval has done, would betray a want of discernment, and a false application of analogies.

The family *Trochilidæ* represents the sub-order *Tenuirostres*, the true bird type, as the *Cypselinæ* among the *Hirundinidæ* do in their sub-order of *Fissirostres*. The *Hirundinæ* represent the first and noblest type among the *Hirundinidæ*.

If scientific persons, with such principles of analogies and affinities, say and think that the *Cypselinæ* represent the *Hirundinidæ* in the order of *Clamatores*, then I must confess, that I don't think them possessed of the right sense of either analogies or affinities. From all these arrangements, it would appear that men, otherwise most capable, if preoccupied in favour of some particular characteristic type, will in accordance with these, and in defiance of nature itself, tear asunder the most natural connections, merely to unite forms like the *Cypselinæ* and *Trochilidæ*, which in all other respects are totally dissimilar. Betwixt the *Cypselinæ* and *Trochilidæ* there can be no question of any affinity, they are merely in their

respective sub-orders, analogous forms, whereas the *Hirundinæ*, *Cypselinæ*, *Podarginæ*, *Caprimulginæ*, show real affinities. The analogous forms may be separated by sub-orders, which never can take place with affinities of form.

If these gentlemen would give up their false application of analogies, and make their anatomical knowledge serviceable for the discovery of the characteristics of a single genus, and be guided by their pure sense of nature, how speedily and gloriously would our science improve.

To bring the coverings of the tarsus and the number of the quill-feathers into accordance with the existence or the want of the apparatus of the singing muscles, as Cabanis has done,* I own is meritorious; but to use these peculiarities as characteristics of order and sub-order, is, according to my judgment and knowledge, altogether wrong. The feathered tarsus is a characteristic of a true bird, and a vestige of it appears in *Nisus*, to which I have assigned the second rank of the third subfamily, *Accipitrinæ*, like the rank of the class birds. This genus, however, occupies by no means the highest rank; and besides, no ornithologist will place the *Falconinæ*, which have no indication of this character, as members of the first subfamily, and *Nisus* as the second genus of the third subfamily, *Accipitrinæ*. The capricious suggestion, that the feathered tarsus is to indicate the highest order of birds (*it only constitutes a true bird*), will generally not succeed, since a tarsus covered with very small scales or feathers, stands nearer to the naked or hair-covered foot of mammalia, than a tarsus covered with scuta, or small scales, which is surely more analogous to the covering of the feet of reptiles. In spite of that, however, neither the *Strigidæ*, where the tarsi and toes are mostly feathered, can be placed above the *Falconidæ*, nor *Elanus*, with its finely grained scaly tarsi, above the *Falconidæ*; it is only a partial character, analogous to the mammalia, while other decisive marks are wanting.

I must openly avow, that I have not been so fortunate as to find altogether, decisive characters by which to designate in a few words the subfamilies of the *Falconidæ*; yet, nevertheless, I am firmly convinced, that the genera are rightly arranged. I might have

* Wiegman. Arch. 1847, p. 186.

osteologically pointed out the *Falconinæ* by the quasi tooth in the *jaw-bones*, and by the round nostrils bored in the *nasal-bones*, if *Ictinia*, the subgenus *Baza*, *Ibicter*, and *Polyborus*, had not partially the same characters, and if *Harpagus* had not the nostrils covered with a soft membrane. Nevertheless, I am sure, no ornithologist will say, that *Harpagus*, with its wings like *Nisus*, is an Accipiter, or *Ictinia*, *Baza*, *Polyborus*, *Ibicter*, are true falcons. If I could exclude the Accipitrine type *Circus*, from the third rank of the subfamily *Milvinae*, I might with some reason distinguish these latter by their long wings, short tarsi, toes, and more or less deeply forked tail, if the subgenus *Gampsonyx*, which has short wings and no forked tail, did not constitute an objection in its entire form. However, it is a true *Elanus*, and cannot possibly be separated.

It must be observed, that the whole of the *Accipitrinæ* have not high tarsi and short wings; and in *Aquilinæ*, particularly in the genus *Cercaetus*, all forms of the wing exist, most fatally perplexing the present arrangement; and also all sorts of tarsal coverings, feathers, scuta, and scales occur. The same is the case with the *Buteoninæ*.

With respect to the subfamilies, I can only explain or lay down this rule, that in one exclusive genus, one particular type is clearly exhibited, which gives its proper rank to the genus and subfamily, and that the other genera are grouped according to the type which is prominently exhibited in them.

The *great question*, how the members of the *Falconidæ* generally range themselves together as members of a subfamily, cannot be answered, because the main character may be felt and yet not expressed by words. In a word, the forms must agree with one another, like the verses of a good poem. As to the poet, no rules can be prescribed by academics, so no receipt can be given the zoologist, how he is to arrange the forms without deviations. He must bring into his science an innate and high sense of *adaptation*, without which he will ever remain a bungler. With this sense, and with the help of philosophy, the forms of life must be studied in order to hit the truth, when making arrangements in collections.

Before concluding these remarks, I feel it a duty to express my warmest thanks to my friends and patrons, particularly to C.L. Bona-

parte, Prince of Canino, Messrs. Bruch, John and George Gray, Gené, Gould, Homeyer, Horsfield, Jäger, Mitchell, Count Von der Mühle, Rüppell, and his Royal Highness the Prince of Wurtemberg, who have so liberally seconded my endeavours, either by written communications, or by furnishing me with valuable materials. To Dr. Rüppell I owe the means of laying the first foundation of my labours, as he allowed me the fullest use of all the materials in the Senkenberg Museum, and furnished me with nearly all the literature required. Once more, I offer my sincerest thanks to this noble-minded gentleman.

The greatest personal gratitude, however, I think due to my honoured friend, Mr. George Gray, who, sacrificing his very scanty leisure time, gave me all the aid in his power, and essentially facilitated my researches in the British Museum. We had silently agreed to correct our respective opinions, and to admit none without the severest criticism. What in the Synonymy belongs either to Mr. G. Gray or to myself, will appear by Mr. G. Gray's List of the Specimens of Birds in the British Museum, Part I., *Accipitres*, which, with all its little imperfections as a first essay of so gigantic a labour, has served me as a most solid guide. Therefore, once more, I repeat my warmest thanks to him who has favoured me, besides, with so many marks of friendship, the recollection of which will ever be dear to me, as it must be to all who know him.

Probably few readers of this Monograph will be acquainted with my classification of mammalia and birds; and I expect, therefore, to be asked by them, "Why are the *Accipitres*, and the families, subfamilies, the genera and subgenera of them arranged thus, and not in another way?" For this reason, I think it a duty to my readers, to explain the principles of my arrangement, of which a well laid foundation appears to be of vital importance to the whole system. However, before entering upon the subject, I must observe, that I presuppose a considerable knowledge of forms, because I am often obliged to anticipate, and to my regret, I cannot give drawings of all the genera. I also must beg my readers to set themselves free from their prepossessions in favour of any systems, in order to be able to follow impartially my investigations. The happy few who have large collections at their disposal, I would advise to study the actual forms which I adduce, in order to test my

opinions and judge for themselves. Before, however, introducing the reader to my arrangement of the Falcons, I must first exhibit the classification, not only of the class of birds, but also give a sketch of that of all animals, because the special arrangement may not be understood without a survey of the whole. I must even go farther, and point out the anatomical structure of the animal body, and how the organs of the senses, which are the principal members of the systems, appear in the different classes. In this doctrine I follow my worthy friend Oken; and I only differ from him in one point, viz., that I recognise in the *Insecta* and *Radiata* the same systems as in the true animals.

The animal body consists of the following systems, of which I suppose one to attain perfection in each single class of the animal kingdom.

I. The *system of the nerves*, whose prime member is the *Eye*. It is only affected by the light, and like the nervous system, it attains in man, of all the Mammalia, its highest perfection.

II. That of the *organs of respiration*, to which the *Ear* corresponds. It is sensible only to the air in motion, and like the respiratory system, it attains its perfection first in the class of Birds.

III. That of the *bones*, to which the *Nose* corresponds, with its fine filligree nose-shell, covered with nervous membranes. It is only affected by the air when pregnant with particles of certain substances. In the Reptiles, there first appears a pierced nose, respiring the elastic air.

IV. That of the *nourishing organs*, to which the *Tongue* corresponds. It is sensible only to substances which dissolve in water. It generally appears first in the class of Fish, and there, is very complicated in the ligaments of the tongue, that support the gills, which are the representatives of the respiratory organs.

V. That of the *organs of the membranes*, to which the *Genitalia* or sexual organs correspond. They are only sensible to warmth and cold. They appear, conjointly with the genital organs, very complete in the Mollusca.

These five classes, in which the five systems which have been pointed out appear, make of themselves a particular subkingdom, which may be classified, even if the other two subkingdoms did not exist on earth. In the last two subkingdoms, viz.—*Insecta* and *Radiata*, the same systems appear, but much less clearly indicated; and I only cite the single classes, because they illustrate each other, and aid reciprocally to prove the propriety of their arrangement. Thus, for instance, the Spiders are the nerve animals, the Insects are the respiratory animals, the *Crustacea* are the bone, the *Annelides* are the nutrition, and the *Cirrhipedes* are the genital animals of their kingdoms. As the birds have their proper station only betwixt the mammalia and the reptiles, we have the insects as being analogous to the birds, their true station, betwixt the *Arachnides* and the *Crustacea*. For these reasons I give a survey of all the classes.

A. TRUE OR REAL ANIMALS.

I. Mammalia. II. Aves. III. Reptiles. IV. Pisces. V. Mollusca.

B. INSECTA.

I. Arachnides. II. Insecta. III. Crustacea. IV. Annelides. V. Cirrhipedes.

C. RADIATA.

I. Echinodermata. II. Aculephæ. III. Zoophyta. IV. Entozoa. V. Infusoria.

Since the subkingdoms B and C are constructed according to a wholly different type, and betwixt them and the members of the true animals, only analogies exist, but no affinities, it suffices to define only the classes of the true animals, in order to get the means for fixing the station of the single members of each class.

MONOGRAPH OF THE FALCONIDÆ,

The first subkingdom consists of the classes—

I. MAMMALIA. II. AVES. III. REPTILES. IV. PISCES.
V. MOLLUSCA.*

I. Class Mammalia.—I call them, with good reason, nerve-animals; because in man, being the only ideal of a nerve-animal, we observe the most perfect and largest brain, and the most complete eye. Man, in whom reason has arrived at its highest possible perfection, and who in his highest race, the Caucasian, has attained to self-consciousness, which reflects the universe, claims to himself the first rank as family to the primates as order, and to all mammalia as *Class*.

Oken† calls the mammalia, eye-head, or by my researches, nerve-animals.

If we look in the class of birds for an order in which the largest brain, the most perfect eye, and the greatest sagacity of bird is to be found, and which have most analogies to man and to the primates, we shall find *no other family* than that of the *Psittacidæ*. As man gives to all primates the first rank as an order, so the *Psittacidæ* give to the *Zygodactylæ* (*Scansores*) the first rank as an order.‡ It is not in the root or stem, but in the flower and fruit that we best recognise a plant.

The family of *Psittacidæ*, which give to the *Zygodactylæ* the first rank as an order, represent the type of mammalia or nerve-animals in the clearest way; they therefore represent *one* of the five types of the class of birds. Hence, if only speaking of birds, we may translate the denomination of nerve-head or eye-bird into that of parrot-type, which implies the same.

Let us now resume the characteristics, which, with respect to body and intelligence, are inherent in this type, and let us inquire whether in other orders we find forms of which we may say, that

* The reader will not be startled at my having comprehended the *Mollusca* among the higher animals; it is not for the sake of the *quinary* system, but from reasons which will clearly appear to the reader from the further perusal of my researches.

† Oken called the mammalia, sense; the birds, nerve; the reptiles, muscle; and the fish, bone—animals.

‡ That Vigors and others classify a part of the *Zygodactylæ* with the *Passeres*, arises from an erroneous application of analogies.

by a large brain, more perfect eyes, and much sagacity in their habits, they represent the nerve-bird or *Psittacine* type.

The *Psittacidae* show a fine oval skull, the eye-socket almost closed; fine and moderately large eyes, of which they can open and contract the pupil at will; the nostrils bored into the nasal bones; cere, the upper mandible large, curved from the broad front, on the sides emarginated, overhanging the short lower mandible, which is turned upwards and emarginated on the sides; the point of the bill shows, on the flat of the mouth, a file-like protuberance; the bones of the palate descend towards the throat; the tongue is thick and fleshy; the breast-bone is entire, with two round holes towards the posterior edge; the tarsi are short, with fine granulate scales; the exterior toe is turned backwards—the toes are finely scaled; the wings, though perfectly developed, are not constructed for flying far over the seas. The greater number of them are ornamented with beautiful green and other brilliant colours. They are mostly true tree-birds, living upon vegetable food; they climb with the aid of their bill; use their feet like hands, carrying with them their food to their mouth. Their droll habits are only to be compared to those of the monkeys; they are equally coaxing, capricious, dainty and malicious. They may all be tamed, and learn to bear confinement. Some may be taught airs, and to imitate spoken words.

Now, if we find these characteristics in other families existing in a more or less number, or but indicated, then we give to them the first rank in their suborders, families, &c.

Thus we see in the *Fringillidae* the bill resembling that of the *Psittacidae*, using their bill in climbing (*Loxia*); parrot-like plumage (*Psittirostra*); a fleshy tongue (*Fringillidae*); the gift of imitating (*Pyrrhula*); an aptness to be tamed and trained; therefore we assign to the *Fringillidae* the first rank among the *Conirostres*, which with the *Fringillidae* exalt themselves to the first suborder of all *Passeres* or *Ornithes*.

In no other suborder of the *Ornithes*, as *Fissirostres*, *Syndactyli*, *Dentirostres* and *Tenuirostres*, is there a family to be found which shows such a number of analogies with the *Psittacidae* as that of the *Fringillidae*. The *Fringillidae* are then the true *Psittacine* type of *Ornithes*.

In the third order, *Grallae*, the Parrot-type is however faintly

indicated in the *Charadriidæ* by a finely rounded skull, large brain, large expressive eyes, and sagacious demeanour; and I had therefore at first some doubts whether I had hit the truth in assigning to this family the first rank in the suborder, *Pressirostres*. That they, however, are organized in a superior degree, will appear from the definition of the other suborders — *Longirostres*, *Brevipennes*, *Cultriostres*, and *Macroductyli*.

Far more visible is the Parrot-type in the *Falconinæ* of the *Falconidæ*. Finely vaulted skull; large brain; expressive eyes — an inclination to close the socket of the eyes; cere, a short upper bill, curved from the large front, emarginated on the sides, and on its tip with a protuberance on the palate, hanging down over the lower mandible, which is obtuse, emarginated on the sides and curved upwards; round nostrils, bored into the bone of the bill; using the feet like hands to catch their prey, and to carry their food to their mouth; and a great aptness to be tamed and trained, give to the *Falconinæ* the first rank as a subfamily among the *Falconidæ*. The *Falconidæ* give to all *Accipitres* the first rank as a suborder, in the fourth order or stem, *Ichthyornithes*, with the suborders I. *Accipitres*; II. *Longipennes*; III. *Brachypteri*; IV. *Totipalmati*; V. *Lamellirostres*.

Among the *Falconinæ* (first subfamily of the *Falconidæ*) I assign the first rank to the genus *Hierax*, on account of their large head and their supposed higher mental development. The black eye-region, cere and feet, indicate also the parrot-type. Anatomy and a closer investigation into their way of living will justify this assumption; the more so, since in the other genera of the *Falconinæ* — *Tinnunculus*, *Harpagus*, *Falco*, *Ieracidea* — the other types are more clearly expressed, which will appear as we proceed with our investigations.

Among the second subfamily, *Milvinæ*, the genus *Ictinia* (Vieill.) takes the first rank, because as a genus it is the only one whose bill is furnished with a tooth and a protuberance on the palate, and on account of their lower bill being obtuse at its tip and furnished with a fine emargination on the sides; besides, they have exterior small round nostrils, which all are analogies with the *Falconinæ*. *Ictinia* is therefore the *Falconine* type of the second subfamily, *Milvinæ* — such as the second subgenus *Erythropus* (*T. vespertinus*) of the second genus *Tinnunculus* among the

Falconinae, represents the *Milvine* type, as expressed in *Ictinia*. These are the reasons why *Tinnunculus vespertinus* (particularly the male) are so like *Ictinia* in the construction of the wings and the colouring of the plumage.

I attribute the first rank to the *Spiziaëtus* in the third subfamily, *Accipitrinæ*: because in this genus we observe the vaulted bill, beginning from the cere; and because we see in their feathered feet, and in their toes, covered with fine dissected scales, an approximation towards the mammalia; besides all this, they are the noblest creatures in their whole subfamily.

For the same reasons does *Aquila* take the first rank as a genus among the fourth subfamily, *Aquilinæ*. A bill curved from the cere, however, exists only in their first subgenus, *Hieraëtus* (*Aq. pennata et morphnoides*), they are the noblest forms in their whole subfamily. Among the last subfamily of the *Buteoninæ*, *Buteo* takes the first place; because the first subgenus, *Archibuteo*, with their feathered tarsi, are obviously the noblest of their genus and whole subfamily. Among the *Gallinæ* (fifth order) the family of *Cracidae* take the first rank, on account of their vaulted and curved bill; their graceful attitude and sagacity, also at once indicate their rank.

We have assigned to the *Psittacidae* as a family—and in this, as the highest member to the *Zygodactylæ*—the first rank as an order. Among the *Ornithes* (*Passeres*), we have given to the *Fringillidae*, and by them to the *Conirostres* as suborder, the first rank. We showed it to be reasonable, that the *Pressirostres* among the *Grallatores*, the *Accipitres* among the *Ichthyornithes*, and the *Cracidae* among the *Gallinæ* should occupy the first rank; we may now proceed to characterize the class of birds, and we put the question: *What is it which makes a bird to be a bird?* After having found out the true bird type, and abstracted from this the characteristics, it will now be an easy task to give to all the suborders and families which represent the true bird in their order, suborder, &c., their respective second rank, which is the very same second rank which the class of birds itself represents in the first subkingdom of real animals.

In the second class of birds, the system of respiration, from which the organs of circulation cannot be separated, is particularly perfect. In this class there exists, without any exception, an

open ear, which is fitted to receive melodious sounds, and to repeat them by a particular muscular apparatus on the lower larynx. In all birds, moreover, some bones even take part in the respiration; in many birds we find oxygen to be conducted through air-sacks, even into the intestines, in order to bathe them in that element of bird-life. No class consumes a greater quantity of oxygen than that of birds, and two sparrows, for instance, inhale more of it than a rabbit which weighs many times more than they. Their lungs and blood are therefore of a lighter red colour, and their blood is some degrees warmer than that of the mammalia. Their pulse beats on that account more forcibly, and is rather like that of a feverish mammal. The greater number of them have a loud, and in proportion to their size, an enormous voice, which they make frequent use of in gladness and sorrow. As a whole, birds may be called rather small than large, rather light than heavy. Nearly the greater number of them are active, swift flyers, mounting high into their element, the air. In this class, we see the wings developed in length at the cost of the feet.

The muscles of the breast are in most of them enormous; in like manner is the crest of the sternum, on which the muscles are attached. In this class we first observe the most artful construction of nests, and the most melodious sounds of voice. Birds are, according to Mr. Oken, *Ear-breast*; and by my researches, *Respiration-animals*.

In the class of birds, there is an order possessed of the most sensible ear, the most melodious voice, the most artificial construction of nests, the largest breast, the highest sternum, the longest wings, the shortest tarsi, the smallest, almost ærial, forms, with the greatest irritability; it is the order *Passeres* (*Oscines* sive *ambulatores* et *clamatores*), which I have called *true birds*, *Ornithes*, since all other names are improper. In like manner as the *Aves* do as a class, so must the *Ornithes* as *Bird-birds* take the second rank as an order.*

* From this it will appear how useless the endeavours of some ancient and recent Ornithologists are, to vindicate the first rank to the singing birds; since these, as the fundamental forms of all birds, must occupy the same rank which the class of birds must occupy in the first subkingdom. That classification could only be proposed by persons who would not recognise the nerve-element in the *Psittacidæ*, or with other words, could not acknowledge the mammalian type in them.

In the second order of *Ornithes* is a suborder, in which appear the longest wings, with the shortest secondaries and covers, and longest quills,* the strongest breast-muscles on the largest chest, with almost the want of a belly, the shortest tarsi, which show the greatest activity of flight, whose voice ever sounds even while they are flying, and that fabricate the most artificial nests; it is the suborder, *Fissirostres* (Cuv.), as I have modified or defined it.

Like the *Aves* as a class, the *Ornithes* as an order, thus must the *Fissirostres* in their order, take the second rank as a suborder.

In this suborder there is a family in which all the above indicated characteristics appear most obvious; it is the family of *Hirundinidæ*, which, as a family, occupies the second rank. In this, THE FUNDAMENTAL TYPE of all birds is to be looked for, which in a strict monographical exposition of this family will be found. This type must be searched for in the *Cypselinæ*; and if found in them, it will show the shortest secondaries and covers, and the longest quills, the shortest tarsi, broad sole on the toes, &c., &c.

According to the characteristics abstracted from the *Ornithes*, the *Fissirostres* and the *Hirundinidæ*, the following classifications will appear as belonging to the second rank.

The family *Cuculidæ* represent the second family among the *Zygodactylæ*, on account of their long wings, with emarginations on the tip, short tarsi rhythmical voice. They are, as a family, the only true birds of this order.

The suborder, *Longirostres*, Cuv., represent the second rank among the *Grallatores*, because among them appear the smallest and nimblest forms, the longest secondaries and covers, the shortest quills, the shortest tarsi, and the first melodious sound in the bird-call.

The suborder, *Longipennes*, Cuv. (fourth order, *Ichthyornithes*), because in the *Sterninæ* and *Procellaridæ*, there appears a great likeness to the swallow type in the long wing, short secondaries and covers, emarginated on the tip, long quills, and deeply forked tail. A trace of an artificial nest by the *Sterninæ*.

The family *Columbidæ*, among the fifth order, *Gallinæ*, because in them appear the longest and most pointed wings, great activity of flight, the shortest tarsi, the smallest forms, rhythmical voice, a kind of song to entertain the brooding female, a trace of an

* M. Kaup translates these *arm-wings* and *hand-wings*.—See plate.

artificial nest, feeding the young ones from the crop, and pairing with one mate, &c.*

If we transfer these analogies to the *Accipitres*, we shall find that the *Strigidæ*, on account of their large ear-holes, very sharp hearing, most nimbly built body, very long wings, and according to their analogies with the *Caprimulginæ* (fourth subfamily of the second family *Hirundinidæ*), must occupy the second rank as a family of the *Accipitres*.

If from the *Ornithes*, *Fissirostres*, and *Strigidæ*, we apply the analogies to the *Falconidæ*, we find that the swallow type, NAUCLERUS, claims the second rank as genus, and *Milvinæ* as subfamily. In *Nauclerus*, we see short secondary and long quills, extremely short tarsi, which are broad near the toes, short toes, deeply forked tail, of which the exterior feathers are much longer than the middle ones. This is a swift flyer and eater of insects.

The analogies abstracted from the *Ornithes*, *Fissirostres*, *Strigidæ*, and *Nauclerus*, assign the second rank to the following genera, in which these characteristics partly appear.

In the first subfamily, *Falconinæ*, the subgenus, *Erythropus*, of the genus *Tinnunculus*, shows a short hand and long quills, short tarsi and toes, feeding on insects, flying after food until twilight. By these characteristics, *Erythropus* (*T. vespertinus*) assumes the second rank as subgenus. *Erythropus* claims to itself and to *Tinnunculus*, as genus, the second rank to *Falconinæ*.

In the third subfamily, *Accipitrinæ*, we observe in the genus *Nisus*, and subgenus *Tachypizia* (*solcensis*), the most pointed wings, the smallest nimblest and most graceful forms, and minutest nearly imperceptible scales on the tarsi, which resemble the booted foot of many *Ornithes*.

In the fourth subfamily, *Aquilinæ*, we find in the genus *Helotarsus*, the longest and most pointed wings, a short doubly forked tail, great agility in flying, and some analogies with the *Strigidæ*.

In the fifth subfamily, *Buteoninæ*, the genus *Pernis* shows many analogies to the Cuckoo and Doves, and like the *Ictinia* and *Nauclerus*, a broad sole of the hind-toe, and very short tarsi. They commonly feed on insects and their eggs.

* How the doves could have been separated as an order from the *Gallina*, even in our days, is not easily conceived, by those who had eyes only for analogies, the affinities were not discerned.

According to the analogies which we observe in the class of birds, we have assigned the second rank to the *Ornithes* as an order, invariably for all times; we have further shown, that the *Cuculidæ*, among the *Zygodactylæ*; the *Longirostres* among the *Grallatores*; the *Longipennes* among the *Ichthyornithes*; the *Columbidæ* among the *Gallinæ*, as a family or suborder, representing the *Swallow* type, must occupy the second rank, like the whole class of birds among the first subkingdom. We have among the *Accipitres* assigned the second rank to the family, *Strigidæ*; and from abstracted characteristics, we find that *Nauclerus*, and its whole subfamily, *Milvinæ*, as well as the genera *Tinnunculus* (*Falconinæ*), *Nisus* (*Accipitrinæ*), *Helotarsus* (*Aquilinæ*), and *Pernis* (*Buteoninæ*) occupy the second rank.*

In the first suborder, *Conirostres*, represented as the swallow type, the second family, *Artamidæ*.

The same type is represented by the family, *Meropidæ*, among the *Syndactyli*. Long wings, with emarginations on the tip of each feather; the tail-feathers on the tip emarginated; and the two middle feathers elongated. The whole family consist of eaters of insects.

In the fourth suborder, *Dentirostres*, Cuv., the swallow type is represented by the second family *Oriolidæ*, by the longest wings, very short tarsi, and being the best flyers.†

In the fifth and last suborder, *Tenuirostres* is the swallow type, very clear in the second family *Trochilidæ*.

In other orders or families, the swallow type is not less clearly expressed.

The second family *Glareolidæ*, in the suborder, *Pressirostres* of the *Grallatores*. Very short secondaries, very long and pointed quill-feathers, forked tail, short feet, and very large and broad mouth; swift or strong flyers, and eaters of insects.

Among the *Brevipennes* is the subfamily *Apterycidæ*, from Australia, in the form of the bill (like the bill of *Scelopax*) the bird-type not very clearly expressed.

Among the *Cultrirostres*, Cuv., Kaup., this type is represented

* From this position, it is evident that forms like *Pernis cuculoides*, *Nisus solansis*, *sive cuculoides*, T., were compared with the cuckoos. These are analogies but dimly expressed, which partly gave birth to some names of species.

† The true swallow type is hitherto not discovered.

by the family *Tantalidæ*, and among the *Macroductyli* perhaps by the family *Rallidæ*.

Among the suborder, *Brachypteri*, the swallow type is not clearly expressed in the family *Uridæ*, but it is very clear as the genus *Tachypetes* among the *Pelicanidæ*. Very long quills and short covers and secondaries, very short tarsi and forked tail; this is an able and perhaps the most energetic flyer among the whole class.

Among the *Lamellirostres*, the swallow type is represented by the family, *Anatidæ*, and among the *Tetraonidæ*, by the genera *Pterocles* and *Syrrhaptes*.

Having now assigned the second rank to all the suborders, families, and subfamilies, which represent the true *Ornithes* or swallow type, we now return and ask ourselves, What is it that constitutes the third class? Reptiles, what are they? What is, in fact, the distinguishing characteristic of a reptile?

In the third class, the reptiles, the system of the bones has arrived at its highest possible perfection. In no other class do we find the vertebral column so strongly expressed as in this one; here it shows the greatest number of vertebræ and ribs.—(100–300 vertebræ with ribs among the serpent.) In this class we find such a mass of bones (*Colossochellis*, *Iguanodon*) as in no other; it contains the longest and most enormous forms of creation. Among the reptiles, being the counter part of the birds, we see the hind-legs often elongated, developed at the expense of the small fore-feet, as in the *Frog*, *Lacerta*, *Agamida*, *Crocodilidæ*.

In this class appear the shortest as well as the smallest and the most variable number of toes; and generally also in animals belonging to it, we first observe extremities really divided into fingers, comparable to those of the mammalia. The muscles are not in proportion to the enormous mass of bones; this with their smaller consumption of oxygen, and the slow circulation of their blood, makes them to be inert creatures, which, during a greater part of the year exist in a state of lethargy. In this class first appear two pierced nostrils, respiring the elastic air at the end of a head, often very much prolonged (*Crocodilidæ*). The greater number of the reptiles love humidity, morasses, though there are many of them also living upon trees or in deserts.

They are *Nose-bone-torso* or *vertebræ* animals. If we apply these characteristics to the class of birds, and look about for ana-

logous forms, which, in their own class we may also distinguish as *Nose-bone-torso*, or *vertebræ* animals, we shall only find the *Grallatores*.

In this order we see the longest vertebral column with the greatest number of *vertebræ*,* the most gigantic, longest and meagrest forms, with the longest neck, the shortest wings, the longest legs, the shortest toes, with the most variable number (2-3-4) of them; among them we find the *Apteryx*, which, like the *Gavialis*, has the nostrils on the tip of the bill. All *Grallatores* may be called lazy in comparison with other birds, as we may sufficiently observe in *Ciconia* and all *Ardeidæ*.

In this order we remark in the almost extinguished suborder, *Brevipennes*, Cuv., the characters we have pointed out most pure, and they therefore constitute the third suborder, in the same way as the *Grallatores* represent the third order of birds.

Since the reptiles, as bone-animals, take indisputably the third rank as a class, thus must the *Grallatores* as an order, and in this the *Brevipennes* as suborder occupy the third rank for ever. The characters proper to the *Brevipennes* and *Grallatores* generally are, high gigantic meagre forms, with long necks, scanty development of the wings, greater perfection of the very long feet, *casques* upon the bill or front, imperfect tail or without tail, short toes, wanting the hind-toe, the nostrils near the tip of the bill, and an abnormous great bill. If we find a number of these characters in some families or suborders, then we assign to them as to the *Grallatores* and *Brevipennes*, the third rank in their orders, &c., &c.

Thus are the *Ramphastidæ* the third family among the *Zygodactylæ*, because in them the greatest mass of bone appears in the bill, and among them should consequently be found the largest forms.

Thus among the *Ornithes* the *Bucerotidæ* are the third family of the *Syndactyli*, which by that family take the third rank as a suborder. The *Bucerotidæ* show enormous bills, long necks, and the most gigantic forms among all *Ornithes*. Among the *Ichthyornithes*

* *Cygnus*, the *Grallatorial* type of its family, however, shows a greater number of *vertebræ*. If the species of the *Brevipennes* were not mostly destroyed, the third family (*Casuaridæ*) would generally show the greatest number of *vertebræ* with the greatest number of ribs.

I assign the third rank to the *Brachypteri*, because among them we find very tall forms, imperfect wings unfit for flying, three toes, and a large number of ribs.—(Uria.)

Among the *Gallinæ*, I give the third rank to the *Crypturidæ* as a family, because they have the nostrils towards the tip of the bill, imperfect wings, and little power to fly, the legs and feet more perfect for running, with 3-4 toes, long necks, and but a scanty development of the tail.

Applying these analogies to the *Accipitres*, we observe that the *Gypogeranidæ*, Bonap., represent obviously the *Grallatorial* type,* by a long heron-like feathered neck, stiff bristling eye-lashes, indifferent use of the wings, extremely long tarsi, with very short toes, and feeding on reptiles.

Among the *Falconidæ* we see the *Geranopus* (*F. gracilis*, T.), analogous to the *Brevipennes* and *Gypogeranidæ*, by a meagre tall figure, long neck, high scaly tarses, exterior toe very short, by their plumage, and probably also by their way of living.

This genus gives to itself as genus, and to all *Accipitrinæ* as subfamily, the third rank. Among this subfamily we generally find very short wings, whereas the legs and feet are more perfect, and are sometimes furnished with enormous claws, as, for instance, the *Spiziaëti*, and the subgenus *Thrasaëtur* in the genus *Asturina*. The analogies collected or deduced from the *Grallatores*, *Gypogeranidæ*, and *Accipitrinæ*, viz., from the structure of their wings and feet, from their mode of living, aptness for running, building their nest on the ground, &c., give to the corresponding genera of the other subfamilies of *Falconidæ* the third rank.

Thus *Harpagus* assumes the third rank among the *Falconinæ*, from the structure of the wings, tarsi with transverse scales, and short toes. In like manner *Circus* does among the *Milvinæ*, from the structure of the wing, long tarsi, with transverse scales, short toes, partly feeding on reptiles, building their nests on the ground or among reeds, and swift running.

Circaëtes represents the third genus among the *Aquilinæ*, on account of showing the longest tarsi in proportion to extremely short toes, and from running on the ground, feeding on amphibia, and

* Of this family, in like manner as of the *Gypaitidæ*, I suppose that all members have perished but one.

having the structure of the wings very like that of the sparrow-hawk. I assign the third rank among the *Buteoninae* to *Polyborus*, for its long bill, nostrils on the extreme upper part, long tarsi, short toes, long neck, plumage like *Accipitrinae* and *Gypogeranidae*, running on the ground, and feeding on reptiles. Thus the family *Sturnidae*, among the *Conirostres*, the *Eurylaimidae* among the *Fissirostres*, the *Corvidae* among the *Dentirostres*, and the *Upupidae* among the *Tenuirostres*, assume the third rank, because we observe that all these families show very great or long bills, the largest forms, or the longest tarsi in their *subordinates*.

In like manner, as representatives of the third family, we have the *Dicholophidae* among the *Pressirostres*, the *Ibidae* among the *Longirostres*, the *Ciconidae* among the *Cultrirostres*, the *Palamedidae* among the *Macroductyli*, because we see in all these families the highest forms, very long tarsi, with short toes, the longest and largest bill, &c.

Among the *Ichthyornithes*, I give the *Procellaridae* among the *Longipennes*, the *Spheniscidae* among the *Brachypteri*, the *Plotinae* among the *Pelicanidae*, and the *Cygninae* among the *Anatidae* the third rank, because they show the longest and largest forms in these families and subfamilies.

For such reasons, we have assigned the third rank to the *Grallatores* as order, to the *Brevipennes* as suborder of the *Grallatores*, to the *Rhamphastidae* among the *Zygodactylae*, to the *Syndactyli*, as suborder among the *Ornithes*, to the *Brachypteri* as suborder among the *Ichthyornithes*, and to the *Crypturidae* among the *Galinae*, as true bone-birds; and in like manner, we have given the third rank to the family of *Gypogeranidae* among the *Accipitres*, and to the genus *Geranopus* (*gracilis*) among the *Falconidae*, and by that to the *Accipitrinae*, and to the alleged genera of the other subfamilies of *Falconidae*, &c., &c.

Having thus attained our aim in fixing the station of the respective genera of the *Falconidae*, we now proceed to the class of fish, whose rank as fourth class among the higher animals may be considered as duly founded and unquestionable.

The fourth class, the Fish, *Pisces*, show the most complicated organs of digestion among all true animals. In this class there is not one species wanting the tongue, which, upon its ramificated ligaments, even supports the organs of respiration. Most of them show

an enormous muscular power in swimming with ease, and the swiftness of lightning, even against the torrent. In all, the belly and tail are pre-eminently developed. Almost all are highly rapacious and voracious, and the larger devour the smaller ones, without even sparing their own species. In them the principle of a rapacious and voracious animal is first and dreadfully expressed. They all show the nostrils unpierced, which characteristic Cuvier already, and Oken have deemed highly remarkable.

Their fins, extremities analogous to those of the higher animals, appertain to the skeleton of the membranes, and divide into manifold membered rays, which are covered with membranes. All are confined to their element, the water, which some few species only can leave for but a very short time without the loss of life. They are consequently true water animals.

The *Pisces* are the *tongue, stomach, belly, or tail animals*. If with the aid of these characteristics, we search in the class of birds for a suborder that corresponds to the *Pisces*, we find but one in which the characteristics of fish are as obviously expressed as in a bird they possibly can be; it is the suborder *Totipalmati*. They show great power of the muscles. In all of them the toes, even with the hind toe turned forward, are connected by a membrane for swimming; so that the foot of the pelican, among all birds, bears most resemblance to a fin. They show the nostrils like a mere point unfit for respiration (*Sula*), or they want them altogether (*Plotus*).—All live near or on the water, feed only on fish, and are most voracious and rapacious. They are all true water-birds, that would starve on *terra firma*.

The *Totipalmati* are consequently the birds most analagous to the *Pisces*, and hence they represent in the fourth order of *Ichthyornithes*, the fourth suborder as fish-birds of the second degree. Let us now collect from the *Pelicanidæ* those characteristics, in order to assign to the other families and suborders, the corresponding, that is, the fourth rank in their respective orders.

The pelicans have a long bill on the upper part, somewhat curved outward, opening wide, even beyond the small eyes, and curved down on the tip with an inserted hook.

The wing and tail-feathers are strong and elastic like whalebone; the toes are turned forward, the exterior one is very long, and the interior edge of the claw of the middle toe is pectinated like a comb.

They feed only on fish, and are most rapacious and voracious.* If we consider these characteristics, collected from the pelican and the *Pisces*, in order to assign to the other families or suborders their fixed station, we give to the *Picidæ* (*Bucconinæ et Picinæ*), among the *Zygodactyli*, the fourth rank, on account of their extreme rapaciousness and voracity, the great development of their tongue and its ligaments, their stiff and rigid wing and tail-feathers, and sharp and curved claws.

We assign the fourth rank to the *Dentirostres*, because in the fourth family *Laniidæ*, we find the longest crooked bill and the greatest rapacity.

The *Ardeidæ* show the widest jaw, great voracity, and rapaciousness, the longest toes, and the pectinated middle claw. This family assumes to itself, and all *Cultrirostres*, the fourth rank as suborder.

In the *Gallinæ*, the ravenous bird type is but faintly indicated in the form of the bill of the family *Tetraonidæ*. Among the *Accipitres* we give the fourth rank to the *Gypætidæ*, because in this isolated form they clearly show the pelican type, by a straight bill, curved upon the tip, with a furrow on the side (a remainder of the compounded bill), by well developed ligaments of the tongue, and an extraordinary power for flying, and an almost incredible voracity.

Among the *Falconidæ*, *Pandion* assumes to itself and all *Aquilinæ*, the fourth rank as a genus, by feeding only on fish.

According to the analogies taken from the *Pelicanidæ*, *Gypætidæ*, and *Pandion*, the genera of *Falconidæ* arrange themselves as follows:—

Among the *Falconinæ* the true falcons take the fourth rank, because they have the longest toes, and greatest voracity. Among the *Milvinæ*, *Elanus* takes the same rank on account of its wide jaw, great voracity, and round claws like *Pandion*.

Among the *Accipitrinæ*, the fourth rank is assumed by *Astur*, because it has the longest toes, and the greatest rapaciousness and voracity.

And among the *Buteoninæ* the fourth rank is occupied by *Rost-*

* In all forms where the pectinated middle claw appears, the greatest voracity has been observed, and may be supposed, if the mode of life be yet unknown, as in the *Pernopterus pileatus* (subg. *capromis*), *strix*, *rostrhamas*, *ardeide*, *glareola*, *Cursorius*, *limosa*, *melanura*, *corvus frugilegus*, the *Caprimulgine*.

rhamus, on account of its wide deeply cloven jaw, dentated middle claw, and feeding on fish.

After these the *Totipalmati* are the most fish-like forms, and they range, like the class of *Pisces*, in the fourth rank of the fourth order of *Ichthyornithes*. We have given to the *Picidæ* among the *Zygodactyli*, the suborder *Dentirostres* among the second order *Ornithes*, the suborder *Cultrirostres* among the third order *Grallatores*, and the *Tetraonidæ* among the fifth order *Gallinæ*; then to the family *Gypaëtidæ*, to the *Aquilinæ*, and among these to *Pandion*, and lastly, to the genera *Falco*, *Elanus*, *Astur*, *Rostrhamus*, &c., &c., the fourth rank, which, either as suborders, families, or genera, they should occupy.

Having by closing our researches on the *Pisces* done with the vertebrate animals, there is yet remaining a class in the first subkingdom, in which the sexual or genital animals appear as the fifth order of mammalia in the *Ruminantia*, and in the fifth order of birds in the *Gallinæ*. We have defined the two higher and the following classes as follows :—

- I. Mammalia, by man, as eye, nerve, and head animals.
- II. *Aves*, by the swallow, as ear, respiration, and breast animals.
- III. Reptiles, as nose, vertebræ, and *torso* or body animals.
- IV. *Pisces*, as tongue, stomach, belly, or tail animals.

We recognized according to my definitions —

- I. The *Zygodactylæ*, by the *Psittacidæ*, as eye, nerve, head birds.
- II. The *Ornithes*, by the *Hirundinidæ*, as ear, respirations, and breast birds.
- III. The *Grallatores*, by the *Brevipennes*, as nose, vertebræ, and body birds.
- IV. The *Ichthyornithes*, by the *Totipalmati*, as tongue, stomach, belly, or tail birds.

Consequently, there is wanting yet in the class of birds, a well founded order, representing the membrane. *Pelvis* or sexual birds. These undoubtedly are the

GALLINÆ.

Among the mammalia, the *Ruminantia* represent the *Gallinæ*, and they occupy the fifth order as membrane, pelvis, or sexual animals. Among the class of reptiles, the *Batrachii* represent the sexual animals, and the *Chondropterygii* represent them among the *Pisces*. If, consequently, we find in each of the four higher classes of animals, an order every one of which has but a very imperfect skeleton in comparison to the others, but which always show a very perfect *pelvis*, and which animals are possessed of a strong sexual energy, and a numerous progeny or brood; if we further see, that all orders divide themselves into five suborders or families, of which the last always represent the sexual animals, then of necessity the idea must consequently arise, that another class must be added to the higher animals, which the unphilosophical sense of earlier times has forcibly separated from them. This class is that of the

MOLLUSCA.

The objection founded on the existence or non-existence of vertebræ, is of itself erroneous, since there are *Pisces* with very imperfect, and even without the vertebral column; and on the contrary, we find among the mollusca, the higher *Cephalopoda*, with indications of head and vertebral bones.

The class of mollusca show as such, characters which are of no greater consequence than those which distinguish the class of *Pisces* from that of reptiles, and I think it a great mistake of Cuvier's to have considered them as a particular subkingdom, with classes of its own, since all the characters of classes adopted by him have but the amount of those orders. However, in spite of this mistake, Cuvier ranges very properly the mollusca immediately after the *Pisces*, which he surely did from his innate strong feeling for nature and fitness.

Considering the mollusca with their life of dream, with their glandulous slime producing membrane, of themselves but as the

fœtal existence of the higher animals, I think all dispute is at an end, whether the molluses or the insects are to be ranged higher as classes. The molluses stand as a part of the first subkingdom, higher than the insects, whereas these, as representing the aves of their subkingdom, range higher than those. If the molluses in their exterior appearance are certainly less perfectly organized than the agile insects, which are organized altogether according to a different type, yet in no insects has there as yet been found a construction of the eye like that of the *Cephalopoda*, which, in its most perfect organization, surpasses even that of the *Pisces* and *Amphibia*, and is only to be compared with that of animals of warm blood.

The organs of hearing have not been as yet discerned with undoubted certainty in insects, whereas a clearly developed ear shell has been recognised in the *Cephalopods* and other genera of molluses.

Since in the *Cephalopods* a very imperfect skeleton, with a cartilaginous case for the brain, is not to be disputed, and seeing the *Ruminantia*,* *Gallinæ*, *Eutrachii*, and *Chondropterygii* having in their respective classes also the most imperfect skeletons, but always with a great perfection of the *pelvis*, I regard this as another analogy which these orders, as the sexual or genital animals of their classes have in common with the molluses as a class.

In the molluses there is but one anatomical system pre-eminently arrived at perfection. It is that of the membrane and sexual organs, which fill up the greater part of the shell, *the analogon of the pelvis*. In the molluses we observe all modes of procreation. Some are simple, some divided hermaphrodites, which require a reciprocal fructification, and others again are of separate sexes. Of the molluses Cuvier says, with reason, that intellectually they are but very little developed beings, which, from their tenacity of life, and great procreating power, alone continued to exist. Of their enormous generation, the antediluvian world particularly gives a clear notion, since many formations or strata are wholly composed of their shells.

All molluses have a very perfect glandular membrane, which, in

* I constitute the fourth order or stem of mammalia out of the suborders of *Whales*, *Dolphins*, *Halicores*, *Seals*, and *Carnivora*, and estimate this stem not according to the *Whales*, *Dolphins*, and *Halicores*, which have but an imperfect skeleton, but according to the more perfect *carnivora*, which, with respect to the skeleton, stand considerably higher than the *Ruminantia*.

most of them, produces shells, adorned with the most beautiful colours; it is most sensible to external impressions.

The molluscs can therefore only be considered as *membrane*, *pelvis*, or *sexual animals*.

If now we apply the characters collected from the molluscs to the class of birds, and search among these for an order in which the membrane, and the skeleton of the membrane, the feathers, are pre-eminently perfect, in which, moreover, the most imperfect skeleton, and the largest pelvis, with the greatest number of eggs appear, we find here surpassing, in these respects, the order of *Gallinæ*. In like manner as the sexual system places the molluscs, as representing this system, in the fifth or last rank as a class; for the same reasons, the *Gallinæ* can be placed nowhere else than at the end of their respective class. Considering the five orders arranged in a circle, we may take occasion to connect the last with the first, the *Gallinæ* with the parrots, according to analogies which the lowest family of *Musophagidæ* has with the *Cracidæ*, the highest family of *Gallinæ*; an analogy which Cuvier already took advantage of in order to connect the *Zygodaetyli* with the *Gallinæ*.

The characters of the *Gallinæ*, which all the different types more or less possess, are a more or less naked membrane, which as crests, flaps, or caruncles, appears on the head and neck; perfect plumage, with gorgets and odd tail-feathers, and of most splendid colours; a very large pelvis, strong feet for running, the greatest number of eggs; a strong sexual propensity; polygamy, the male takes no care in rearing the brood; a very slight indication of intellectual life, so that it may be said of the *Gallinæ* also, that they are preserved only by their great fertility.* We remark also, that they love to bathe in dust or sand, are very pugnacious in regard to their females, and live on vegetable food.

Where we find these physical or mental characteristics in other orders appearing either in greater or lesser number, or even but indicated, we give to the respective divisions the fifth rank, that is to say, we look upon them as belonging to the lowest forms, or sexual birds. Thus we give to the family of real *Gallinæ*, *Phasianidæ* with the *Pavoninæ*, *Numidiinæ*, *Meleagrincæ*, and *Phasianinæ*, the fifth rank.

* If, for instance, the partridge laid but two eggs, it would have been extirpated long ago by ravenous animals and men.

We give to the *Ducks* of the fourth order the fifth rank in that order, because they show membraneous flaps on the head and neck, a very large pelvis, a great number of eggs, beautiful plumage in the male, but modest in the female, an inclination to polygamy, spurs on the wings in place of the tarsi, &c. They are, in every respect, the hens or sexual birds of their order.

According to almost the same reasons, we assign the fifth rank to the suborder, *Macroductyli*, among the *Grallatores*. In most languages their analogy with the hens has been felt and expressed, by calling them "water hens."

Among the *Ornithes*, I give the fifth rank to the *Tenuirostres*, because in the fifth family *Meliphagidæ*, most of the characteristics of hens appear. Among the *Zygodactylæ*, I assign the fifth rank to the *Musophagidæ*, on account of their analogies with the *Cracidæ*.

Applying these analogies, I give the following families in their respective suborders the fifth rank.

Among the *Conirostres* to the family *Alaudidæ*.

Among the *Fissirostres* to the family *Ampelidæ*.

Among the *Syndactyli* to the family *Pipridæ*.

Among the *Dentirostres* to the family *Paridæ*, because we see the greatest number of eggs in this family.

Among the *Grallatores*, I give the same rank among the *Pressirostres* to the family *Otidæ*; among the *Longirostres* to the *Scolopacidæ*, among the *Brevipennes* to the family *Struthionidæ*, among the *Cultrirostres* to the *Phœnicopteridæ* (it represents the Gallinaceous type as it is presented in the *Lamellirostres*), among the *Macroductyli* to the *Parridæ*. I give the same rank in the *Ichthyornithes* to the *Podoidæ* among the *Brachypteri*, among the *Lamellirostres* to the *Anserinæ*.

Applying these analogies to the *Accipitres*, we find that no other forms but those of *Vulturidæ* can be considered as Gallinaceous types, and it is only from the greater number of the genera of this very interesting family having perished, we are at a loss to prove that there are forms to be found in it which feed on vegetable food and lay a larger number of eggs.

Among the *Falconidæ* we find a subfamily, and in this a genus, which, in a naked checkered visage and throat, henlike tarsi, partly feeding on vegetables, henlike voice, bathing in sand, and eagerness for fighting, shows many analogies with the *Vulturidæ* and *Gallinæ*.

It is the genus *Ibicter*, which assumes to itself the fifth rank as genus, and to the *Buteoninae* as subfamily. They show the lowest nature, and there are species among the *Ibicter* which devour not only carrion but even the excrements of animals.

According to the analogies taken from *Ibicter* and the *Vulturidae*, it results, that in the subfamily of *Falconinae*, the genus *Ieracidea* occupies the fifth rank, on account of its *Ibicter*-like construction of the foot, and feeding on carrion and caterpillars, and that *Milvus* among the *Milvinae*, takes the same rank from its vulture-like bill and low buzzard-like nature or habits.

We give to the buzzard-like *Asturina* among the *Accipitrinae*, and to *Haliaëtus* among the *Aquilinae* the fifth rank, because in them the longest, straightest, and highest vulture-like bill, and the vulture and buzzard-like carriage and habits appear.

According to the same principles, we have endeavoured to arrange the subgenera of the genera *Falconidae*, which to indicate here would be rather too prolix, but which will be done with more propriety in the following special descriptions.

After the most careful critique of my system and researches, I have been unable to find out a sixth subfamily in a family, or a sixth genus in a subfamily, or a sixth subgenus in a genus, or a sixth true species in a subgenus.

From the above investigations of the class of birds, there have resulted the following suborders, order, or families:—

I. Family ZYGODACTYLE.	II. Suborder ORNITHES.	III. Suborder GRALLATORES.	IV. Suborder ICHTHYORNITHES.	V. Family GALLINÆ.
1. <i>Psittacidae</i>	1. <i>Conirostres</i>	1. <i>Pressirostres</i>	1. <i>Accipitres</i>	1. <i>Cracidae</i>
2. <i>Cuculidae</i>	2. <i>Fissirostres</i>	2. <i>Longirostres</i>	2. <i>Longipennes</i>	2. <i>Columbidae</i>
3. <i>Rhamphastidae</i>	3. <i>Syndactyli</i>	3. <i>Brevipennes</i>	3. <i>Brachypteri</i>	3. <i>Crypturidae</i>
4. <i>Picidae</i>	4. <i>Dentirostres</i>	4. <i>Cultrirostres</i>	4. <i>Totipalmati</i>	4. <i>Tetraonidae</i>
5. <i>Musophagidae</i>	5. <i>Tenuirostres</i>	5. <i>Macrodactyli</i>	5. { <i>Lamelliros- tres</i>	5. <i>Phasianidae</i>

In the *Italic* forms—I. 1, II. 2, III. 3, IV. 4, V. 5—the fundamental types, viz.—Parrot, Swallow, Ostrich, Pelican, and Hen—are to be looked for.

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The second order, *Ornithes*, consists of the following families :—

I. Suborder CONIROSTRES.	II. Suborder FISSIROSTRES.	III. Suborder SYNDACTYLLI.	IV. Suborder DENTIROSTRES.	V. Suborder TENUIROSTRES.
1. <i>Fringillidæ</i>	1. <i>Muscicapidæ</i>	1. <i>Priornitidæ</i>	1. <i>Luscinidæ</i>	1. <i>Certhidæ</i>
2. <i>Artamidæ</i>	2. <i>Hirundinidæ</i>	2. <i>Meropidæ</i>	2. <i>Oriolidæ</i>	2. <i>Trochilidæ</i>
3. <i>Sturnidæ</i>	3. <i>Eurylaimidæ</i>	3. <i>Bucconidæ</i>	3. <i>Corvidæ</i>	3. <i>Upupidæ</i>
4. <i>Buphagidæ</i>	4. <i>Coracidæ</i>	4. <i>Alcedidæ</i>	4. <i>Laniidæ</i>	4. <i>Sittidæ</i>
5. <i>Alaudidæ</i>	5. <i>Ampelidæ</i>	5. <i>Pipridæ</i>	5. <i>Paridæ</i>	5. <i>Melophagidæ</i>

In the *Italic* forms, the Parrot, &c., types, are most clearly expressed.

The third order, *Grallatores*, consists of the following families :—

I. Suborder PRESSIROSTRES.	II. Suborder LONGIROSTRES.	III. Suborder BREVIPENNES.	IV. Suborder CULTRIROSTRES.	V. Suborder MACRODACTYLLI.
1. <i>Charadriidæ</i>	1. <i>Tinochoridæ</i>	1. - - -	1. <i>Gruidæ</i>	1. <i>Fulicidæ</i>
2. <i>Glareolidæ</i>	2. <i>Tringidæ</i>	2. <i>Apterycidæ</i>	2. <i>Tantalidæ</i>	2. <i>Rallidæ</i>
3. <i>Dicholophidæ</i>	3. <i>Ibidæ</i>	3. <i>Casuaridæ</i>	3. <i>Ciconidæ</i>	3. <i>Palamedeidæ</i>
4. <i>Cursoridæ</i>	4. <i>Totamidæ</i>	4. - - -	4. <i>Ardeidæ</i>	4. <i>Chionidæ</i>
5. <i>Otidæ</i>	5. <i>Scolopacidæ</i>	5. <i>Strithionidæ</i>	5. { <i>Phœnicop-</i> <i>teridæ</i>	5. <i>Parridæ</i>

In the *Italic* forms, the Parrot, &c., types, are most clearly expressed.

The fourth order, *Ichthyornithes*, consists of the following families :—

I. Suborder ACCIPITRES.	II. Suborder LONGIPENNES.	III. Suborder BRACHYPTERI.	IV. Suborder TOTIPALMATI.	V. Suborder LAMELLIROSTRES.
1. <i>Falconidæ</i>	1. <i>Lestridæ</i> (?)	1. <i>Alcidæ</i>	1. - - -	1. <i>Cereopsidæ</i>
2. <i>Strigidæ</i>	2. <i>Laridæ</i>	2. <i>Uridæ</i>	2. <i>Phætonidæ</i>	2. <i>Anatidæ</i>
3. <i>Gypogeranidæ</i>	3. <i>Procellaridæ</i>	3. <i>Spheniscidæ</i>	3. - - -	3. <i>Cygnidæ</i>
4. <i>Gypætidæ</i>	4. - - -	4. <i>Colymbidæ</i>	4. <i>Pelecanidæ</i>	4. <i>Mergidæ</i>
5. <i>Vulturidæ</i>	5. - - -	5. <i>Podoidæ</i>	5. - - -	5. <i>Anseridæ</i>

In the *Italic* lines, the Parrot, &c., types, are most clearly expressed.

I give these schemes of the families, as at present I think them most properly arranged; but I do not answer for their not being still susceptible of many modifications, by restricting or enlarging them. All this can only be done, by giving Monographs of the single families, by which either superfluities will fall off or wants be discovered.

Many families cannot be divided into subfamilies, as, for instance, the *Alcedidæ*, but merely into five genera with subgenera; others, as yet considered as groups of families, may, upon a closer investigation, prove to be but subfamilies, as, for instance, probably the family *Trogonidæ* is but a subfamily, which represents the swallow type among the *Musophagidæ*. The *Nectarinidæ* form a subfamily, representing the *Luscinidæ* among the *Certhidæ*, and the *Turdidæ* are a subfamily of the *Luscinidæ*.

The *Paradisidæ* show, in more than one respect, the Gallinaeous type; and I think it very likely that they must be ranged with the *Oriolidæ** as a subfamily. The family *Colidæ* will probably not hold good as a family, but must probably be considered as a member of a subfamily, representing the *Pelicanidæ* among the *Fringillidæ*. Where with propriety I am to place the *Megapodidæ*, I know as little as yet as where to fix the *Manura*. These are questions which are still to be solved and decided by the investigation of the respective families. Nothing, therefore, is more a *desideratum* than monographical essays on large families, as on the *Psittacidæ*, *Cuculidæ*, *Fringillidæ*, *Muscicapidæ*, *Hirundinidæ*, *Luscinidæ*, &c., in order partly to find out fixed boundaries, partly to know what constitutes a family, a subfamily, a genus, or a subgenus; and moreover, to ascertain what families may be divided into subfamilies and which may not. By such essays a very great number of analogies, overlooked or unobserved by myself, will yet appear, which will serve to prove still more the genera already fixed. Future times will not be contented with outward analogies alone, but search for them even in the skeleton and body, in which a new series of distinctive characters will present themselves.

When all this at some later time shall have been done, then the zoologist may, from the retirement of his museum, advise the

* Or *Corvidæ*.

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traveller what he has to observe or not in one or other genus with respect to their habits, whenever the genus has found its proper station according to a natural system.

At that time we shall admire the infallible order of nature; and those men who have guessed and devised these strict iron laws of nature, will no longer, in a futile and awkward manner, be vituperated and compared with Procrustes. That time will, when freed from scientific pedantry, surely with better reason, compare with that fabulous giant, those naturalists, who, from the mere existence or want of two pairs of muscles on the lower larynx, &c., have forcibly torn asunder and mutilated nature by artificial sections.

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THE animal and vegetable productions of islands always present some interesting inquiries. It is a general law, that the animal forms are identical with those of the nearest continent, although the species may, and in some remarkable instances do differ, and are in a manner insulated. The ornithology of the West Indian Islands, which we have been endeavouring to procure and work out, exhibits some curious instances of one species being peculiar to an island and not known upon the continent; of others known in the interior of the mainland, far from the coast, and met with again only on a distant island, other islands at the same time intervening between; of few of the islands possessing similar ornithological faunas; and of neighbouring islands, without any apparent cause, differing materially in their ornithology.

Though not properly belonging to the group commonly called West Indian Islands, the Bermuda or Somer's Islands, form a part of the American world zoologically considered; and from their position far in the wide sea, and being in the tract of the migratory species from both continents, it becomes a matter of interest to watch, if possible, those which rested there on their migrations, or if any had taken up a continuous abode.

We are enabled to fill up this blank by the kindness and attention of two gentlemen. Lieutenant Wedderburn of the 42d Regiment, which has been for some time quartered in Bermuda, has devoted his spare time to the investigation of its ornithology; and the Rev. H. B. Tristram, now of Castle Eden, Durham, having resided three years in these islands, attended generally to their zoology, and the following list is the result of their notes, observations, and specimens:—

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The manner in which islands became inhabited by living beings, or clothed with vegetation, is a subject of great interest. Birds, of all other creatures, possess the greatest facilities for passing over vast distances, and in general will be found to be the most numerous inhabitants, both numerically and specifically, particularly those belonging to the waders and aquatic tribes. Mammalia and reptiles are generally extremely limited, while insects and the flora of the island depend more on accessory causes, and sometimes exhibit geographical differences not presented by other groups.

The flora of the Bermudas presents varied features; in a list of about 130 species commonly met with, now before us, we see that the hand of man has been much employed in their distribution, and we can only thus account for the appearance of common European and British plants, such as *Lepidium ruderale*, *Mercurialis annua*, *Cerastium viscosum*, *Runex asctosa*, *Anagallis arvensis*, &c., as carried thither with the various economic seeds, which from time to time have been attempted to be introduced.

The animals yet observed, except imported ones (such as rats and mice), consist of only a single species, referred by Mr. Tristram to *Vespertilio pruinosus*, or Hairy Bat of North America. This extends from Philadelphia to the Saskatchewan, in latitude 54°.

Reptiles, as we might anticipate, are equally limited, they perhaps being the most unlikely to be introduced, the tortoises excepted, which are ascertained to have escaped from confinement.

The entomology is more extended. The *Lepidoptera* present the N. American types as *Danaïd archippus*; but some European species have also been met with, the appearance of which is not so easily accounted for. Mr. Tristram has taken *Cynthia cardui*, *Vanessa io*, *atalanta*, *polychloros*, *sphinx*, *convolvuli*, &c.; and on submitting these to the examination of an entomological friend, he writes, with the exception of *V. atalanta*, which is the American form, the others are reported to be identical; and he presumes that *V. io* and *polychloros* were introduced, the only spot where they were captured being in the garden of Mr. Kennedy, who for years had an annual importation of plants from England.

The ornithology of the Bermudas is essentially North American. Mr. Tristram printed a list in the islands, of all the birds that had occurred to his notice in 1847; and that list, drawn up with the

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assistance of any authorities that were accessible to him, together with the information afforded by Mr. Wedderburn and himself, up to the present date, are the authorities for the following catalogue. We may add, that nearly all the specimens have been submitted to our examination, and compared with American and European birds. Mr. Tristram arranged his list under "constant—summer—autumnal and winter—vernal and accidental residents or visitants;" and we have preferred keeping that to a systematic arrangement, as it more easily shows the proportions under which the species are found.

From this catalogue it will be observed, that among the whole number, no true South American species has been met with; that in all, there are only seven or eight constantly resident species; and that the great mass of the birds are either those which pass the summer in the United States, or similar climates in North America, and which reach the Bermudas in their autumnal migration southward, and again on their return in spring; or of the *Grallatores* and *Natatores*, which breed still farther northward, and returning in autumn, are stopped by these lands, and there spend their winter, finding a suitable shelter and food around their shores or among their marshes. Of the first of these Mr. Tristram observes, "that though not unfrequent, and many of them very common, they did not seem guided by any regular seasons of migration, but constantly appeared during the latter part of the year; indeed, from August to February, though visiting us in greatest numbers during October and November." Of the *Natatores*, "the *Anatidæ* are always later in their visits than any of the Waders. The earliest, indeed the only one I have noted before November in any year, was one Scaup, in October, 1847; the various ducks are not unfrequently captured in the marshes in company with the domestic ducks of the islands. The gulls have only been shot in winter, chiefly late in the season, except the Kittiwake, which is obtained in all states of plumage, and occasionally at all times of the year."

Additional attention will, no doubt, add a few more species to the ornithology of the Bermudas; and violent storms or hurricanes occurring about the periods of migration, will occasionally drive birds from their courses which would not have made these islands, and which could not be ranked beyond occasional stragglers. Such will be the

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case with the ruby throated Humming Bird. Mr. Tristram states, that several residents had informed him (and there can be no reason to doubt the information), "that vast numbers resorted to Bermuda in the autumn of 1814. Vast numbers were captured, but many remained until spring, particularly on David's Island, when they all disappeared, and have not been observed since." In like manner, a few species may be lost, as in an old work on Bermuda, by Captain John Smith, who, in enumerating the birds, reckons "numbers of small birds, like sparrows and robins, which have lately been destroyed by the wilde cats," and who also mentions the "Cohow," of which Mr. Tristram remarks, in his printed list, "that a few are known still to breed on or near Cooper's Island." This is a nocturnal bird, and although the descriptions of the fishermen are very vague, in all probability it will turn out to be one of the petrels.

CONSTANT RESIDENTS.

Sialia wilsonii.

Mimus carolinensis.—Mr. Wedderburn has "heard this bird imitating the harsh cry of the belted kingfisher."

Guiraca cardinalis.

Vireo noveboracensis.

Corvus americanus.—Mr. Wedderburn states, "introduced into Bermuda some years since, and used to be very rare." It now however has naturalized itself, for in a letter received by the same gentleman, when on a visit here in 1849, it is mentioned, "young crows were observed in the neighbourhood of Warwick church during the first week of April."

Chamæpelina passerina.

Gallinula galeata.—This is given in Mr. Tristram's list among the constant residents, but Mr. Wedderburn's note is, "not uncommon in winter, but whether a resident or not is a matter of doubt."

Ortyx virginianus.—"Formerly abundant when barley was more cultivated, now nearly extinct, and probably a bird of passage, and more properly belonging to the next sections."

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SUMMER RESIDENTS.

Phæton flavirostris. — This species was confounded by both Wilson and Audubon with *P. æthereus*, and as such is mentioned in their works; Audubon's plate, however, represents the present bird. According to Wilson's list, it is "common during summer on the coasts of the Southern States;" and Audubon's specimens "were obtained in summer on the Tortugas." It might have been anticipated, therefore, that this would be the Bermuda species, although Mr. Strickland possesses a specimen, which he considers *P. flavirostris*, from a very different locality, the island of Mauritius; while again the species which breeds on St. Giles' Rocks, off the coast of Tobago, is *P. æthereus*. Mr. Wedderburn states of the Bermuda *Phæton*, "very common during summer, arrive about 10th March, and depart middle or end of September. They breed among the rocks, make no nest, and lay a single egg, of a reddish-brown colour, mottled with dark brown. They never attempt to leave their nests, but allow themselves to be taken." Mr. Tristram, who has kept a register of the appearance and disappearance of many of the migratory birds, for three years that he resided on these islands, gives the dates:—

First observed.	Plentiful.	Last observed.
1847, 5th March.	20th March.	1846, Nov., a straggler.
1848, 10th March.		1847, 9th October.
1849, 12th March.		1848, 27th September.

Sterna dougalii. — First observed by Mr. Wedderburn. Arrive in June, and breed on the farthest rock off St. George's. Mr. Tristram says, "first week of May till end of August not scarce."

Sterna hirundo.

AUTUMNAL AND WINTER VISITANTS.

Many of these are accidental and very rare; those which visit Bermuda in spring, on their return northward, are marked V.

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Pandion haliaetus.—First observed by Mr. Wedderburn. Only three specimens, obtained in 1847–48—in October, 1847—W.; October, November, and December, 1848—T.

Falco peregrinus.—This will be *F. anatum* of Bonap., &c.

Falco sparverius.

Falco columbarius.

Circus cyaneus.

Surnia nyctea.

Otus americanus.

Otus brachyotus.

Mr. Wedderburn states, that “these five birds are rare, or of unfrequent appearance;” but Mr. Tristram remarks, “*Falco columbarius* occasionally seen throughout the winter and until the month of May, when I have observed it for the last three years. Though not uncommon, it appears rather a straggler than a migratory visitant. Two specimens of *Surnia nyctea* were shot in October, 1846. They were observed sitting on a prostrate spar, in a little sandy bay, and were mistaken for gulls. *Otus americanus* not uncommon in November, December, and January, 1846–7. *Otus brachyotus* by no means uncommon in November, and up to February in each year.

Scotophilis acadica.—One specimen was shot by Mr. Wedderburn in January, 1849.—T. Mr. Tristram mentions, in a note from Bermuda, that he had obtained a specimen of Tengmalm’s owl in February, which had lighted on a schooner, 150 miles N.N.W. of Bermuda. *Circus cyaneus* and *Otus brachyotus* we cannot distinguish from European specimens. They are respectively *C. americanus* and *O. ulginosus* of Bonap. and others.

Chordeiles virginianus.—Mr. Wedderburn states, “numerous in October; seen occasionally on their way north in spring; got a specimen this year (1848), in September, which is unusually early.

Mr. Tristram, in his last communication, observes, that *Chordeiles virginianus* “appeared in great numbers, invariably about the beginning of October; by the 24th almost all had disappeared, though a few stragglers remained until 12th November, 1847. They were never more than two together, but there was not an acre of land in the whole island, which had not its tenant hunting in a small circle for some hours after nightfall. In the day time they lay hid in the marshes, and more than once I have almost trod on them before they would take wing, which they do, uttering their sharp yet pleasing chirrup, followed by a note something like the whip-poor-will. In February, 1848, a few were seen apparently going north.

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This is the only instance I know of in which they reappeared in spring; though so numerous are they, and so constant in their autumnal visits, that they are the only one of our visitors with which the Bermudians seem generally acquainted."

Hirundo rufa.—"A few arrive in August, but do not remain above a few days. They are constantly seen sitting on the dead branches of the cedar."—W.

"In large flocks for not more than one or two days, in 7th August, 1847—23d, 1848. Mr. Hurdis shot one female adult on 10th May, 1847."—T.

H. riparia.—"Congregated in company with *H. americana*, 9th August, 1847."

Ceryle alcyon.—Mr. Wedderburn states, "arrives beginning of September; remains all winter; is very common at the different mangrove swamps." Mr. Tristram remarks, numerous every where in winter, and very bold, darting and fishing among the mangrove trees, and seen perching on roofs, and frequently on the higher boughs of the cedars.

They appeared,	Left for the North,
September 7, 1847.	May 9, 1847.
„ 24, 1848.	June 2, 1848.
	May 5, 1849.

I watched minutely; but although a few remain so late, I could never discover that they ever bred about the islands. In April they begin to be scarce, but the whole generally reappear about the same period in September."

Sylvicola coronata.—"The different *Sylvicolinæ* have been merely stragglers, and shot from the end of September until as late as 17th December. I shot *S. americana* in my garden in January, 1849, after a westerly gale."—T.

Sylvicola petechia, first noticed by Mr. Wedderburn, who shot the first specimen seen, on 17th December, 1847.

S. discolor.

S. americana.

Sciurus noveboracensis.—"Met with occasionally in winter."—W.

Anthus ludovicianus.

Linaria minor.—"Stragglers in November and March."—T.

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Dolichonyx orizivorus.—Mr. Wedderburn states, that all the specimens obtained were in winter plumage.

Plectrophanes nivalis.—"A specimen was procured by Mr. Wedderburn on 15th February, 1848. Appears in winter after heavy northerly and westerly gales. A flock in January and February, 1848 and 1849."—T.

Lanius ludovicianus.—"One example only in spring of 1847."—W. "Three shot in March 1847."—T.

Bombycilla americana.—Mr. Wedderburn observes, "I found a small flock of these birds, 11th October, 1847, in winter plumage. Again, on 17th December, I got four specimens, but only one had a few of the beautiful wax-like tips to the secondaries. They had not been observed here before." Mr. Tristram remarks, of this same flock, that they were young birds, and that three of them were little more than nestlings. Another flock appeared in November, 1848.

Picus varius.—"These birds may remain all the year, but are very rare."—W. Mr. Tristram believes it to be a constant resident; but from their extreme shyness, and the part of the islands they inhabit, he had failed in finding the nest. "It has been shot in every state of plumage, and at all times of the year."—T.

Coccyzus americanus.—"Shot on 15th October, 1847, and several times during the last September and October; but single birds only, and always after or during heavy weather. On two occasions, it boldly sought refuge in dwellings, and was taken by the hand alive."—T.

Ectopistes carolinensis.

Squatarola helvetica.

Charadrius virginianus.—"Common from September until middle of October."—W.

Aegialites vociferus.—"Sometimes met with in winter."—W.

Aegialites semipalmatus.—"Not uncommon in winter."—W.

Aegialites melodus.

Calidris arenaria.

Strepsilas interpres.—"Common in winter."—W.

Tringa pectoralis. } —"I found them not uncommon during

Tringa schintzii. } September and October, 1847."—W.

Tringa pusilla.—"Common in August and September. To be seen generally in company with the semipalmated Sandpipers."—W.

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Tringa maritima.

Tringa semipalmata.—“Common in August and September.”—W. “Of all the *Tringæ*, the *T. semipalmata* is the most numerous, and they resorted to some little salt ponds in David’s Island, from August to February. The various species of *Tringæ* and *Totani* seem to feed and live in common, as I have frequently found one or two Stints, Schintz, Pectoral and Spotted Sandpipers, in company with large flocks of our familiar semipalmated. On the brink of a pond in Ireland Island, where they were never fired at, they became in a few days so tame, that I have often watched them not two yards distant, feeding and running along with perfect unconcern, and shaking their tails with that unceasing restlessness which the whole tribe exhibit.”—T.

Phalaropus lobatus.—“A pair were obtained in March, 1848. One I picked up in a little bay, dead, but uninjured, and quite fresh. The female was on the same day caught by Mr. Marriot, who struck it with his oar as he was boating.”—T.

Totanus macularius.—“Not uncommon in summer and until the end of September. I think a few must breed.”—W.

Totanus solitarius.—“Common in September.”—W.

Totanus flavipes.—“Common in August.”—W.

Totanus vociferus.—“Met with in October. It is almost impossible to approach these birds, they are so shy.”—W.

Catatrophorus semipalmatus.

Himantopus nigricollis.

Scolopax wilsonii.—“Common during October.”—W.

Macrorhamphus griseus.

Rusticola americana —“Very rare.”—W.

Numenius borealis.—“Very rare.”—W.

Numenius hudsonicus.

Fulica americana.—“Occasionally met with in winter.”—W.

Ortygometra carolinus.—“Numerous from September until December. I have seen these birds, when alarmed by my dog among the mangrove trees, frequently fly and perch on them many feet from the ground.”—W. “Arrived in 1847 as early as 31st August. Two on 3d September, several on 7th, after which plentiful. Not observed after March.”—T.

Ortygometra noveboracensis.—“Only two found by me in October, 1847,” when it was first noticed.—W.

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Ortygometra jamaicensis.—"The only one yet seen, was found by me in November, 1847."

Nycticorax gardeni.—"Very rare.—W. "The young are frequent, but we never obtained a specimen in adult plumage until one in November, 1848."

Botaurus lentiginosus.—"Not uncommon in winter."—W. "Frequently obtained from October to December in every year."—T.

Ardeola exilis.

Ardeola virescens.—"One or two are generally met with every winter."—W.

Egretta leuce.

Ardea herodias.—"Remains through the winter, and occasionally seen through the year; great numbers were brought over by a gale. It was the first appearance of the heron that year, and the birds seemed perfectly exhausted. Five of them took refuge in a convict hulk, and one flew into the barracks. I obtained one, and kept it in my garden for some months, when it died suddenly, apparently from overgorging itself with flesh, which the servant had given to it instead of fish. It enjoyed much standing with its legs in a pail of salt water, and always preferred its morsels of fish from the water rather than on the ground. When it had food before it, it was bold enough to attack either men or dogs; at other times it was *to me* perfectly tame and familiar. It was not a young bird of the year, as were most of the other refugees."—T.

Anser hyperboreus.

Anser canadensis.

Anas obscura.

} "Very rare."—W.

Anas discors.

Anas carolinensis.

} "Four killed 12th October, 1847."—T.
} "Both are occasionally met with in winter."—W.

Dendronessa sponso.—"A female bird was once shot."

Rynchapsis clypeata.—"Occasionally met with in winter."—W.

Dafila acuta.

Fuligula marila.

Fuligula mariloides.

} "Rare."—W.

Clangula albeola.—"Rare."—W.

Mergus merganser.

Mergus cuculatus.

ORNITHOLOGY OF THE BERMUDAS.

Phalacrocorax dilophus.

Plotus ankinga.

Tachypetes aquila.

Pelicanus fuscus.

Podiceps cornutus.

Podiceps carolinensis.

Larus occidentalis.—"Three specimens met with in 1847."—W.

Larus zonorhynchus.

Larus argentatus. } —"A few arrive in winter."—W.
Larus tridactylus. }

Xema atricilla. } —"Both rare, first only once met with."—W.
Xema sabinii. }

Sterna fuliginosa.—"I have only once met with this bird."—W.

Thalassidroma wilsonii.—"Common outside the reefs, never seen inside, and not known to breed on any of the rocks or islands."—W. "The fishermen tell me, that *T. wilsonii* breeds on the same rocks (Cooper's Islands) where the cinereous sheerwater's eggs have been this year obtained. The rock is very difficult of access, and it is only in a perfect calm that a boat can land."*—T.

VERNAL VISITANTS.—(ACCIDENTAL.)

Myiodytes mitratus.—30th March, 1847.

Milvulus tyrannus.—In March, 1847-8.

Nycticorax cayenensis.

ACCIDENTAL STRAGGLERS FROM THE EASTERN HEMISPHERE.

Saricola ananthe.

Crex pratensis.—"Once met with. Shot on 25th October, 1847."—W. This specimen was sent to Mr. Yarrell from Bermuda, and in reply to my inquiries regarding it, he writes, "It is a young bird of the year, perhaps bred in a northern latitude, and forced westward by the strong winds of the autumnal equinox, when crossing the sea on its way south."

Scolopax gallinago.—"Shot a couple in December, 1847. The bills of these being much longer, their size less, and having

* Mr. Hurdis writes me, that he has, this Spring, obtained the adult bird and eggs from Cooper's Island.—T.

ORNITHOLOGY OF THE BERMUDAS.

fourteen instead of sixteen feathers in the tail, made me observe them as different from the common Snipe."—W.

This Snipe, of which Mr. Wedderburn brought one specimen, is closely allied to that of Europe; the tail, however, is imperfect, and the feathers are of unusual breadth. On showing it to the Prince of Canino, who has paid much attention to this genus, he was inclined to consider it different from either *S. gallinago* or *wilsonii*; and we would request, if possible, that one or two specimens can be yet procured for us.

DOUBTFUL.

Buteo vulgaris.

Ectopistes migratoria.

Tringa bartramia.

Larus marinus.

Sterna anglica.





Drymicea Mentalis Frazer

ILLUSTRATIONS OF ORNITHOLOGY.

DRYMOICA MENTALIS, FRASER.

Drymoica mentalis, *Fraser*, Proc. Zool. Soc. Lond., 1843, p. 16.— *Trotter* and *Allen*, Narr. of Exped. to River Niger, ii. p. 490. App.

THE description in the proceedings of the Zoological Society seems to have been taken from an imperfect specimen, so that we trust the accompanying figure, with the account of its habits previously given (p. 7), may not be unacceptable to ornithologists. Dr. Gordon presented a specimen to the Museum in Edinburgh, which bears his Number 16. We add the dimensions from the specimen in our possession.

Entire length, 8; bill to forehead, 6; to gape, 1; wing, 2.9; tail, 3.4; tarsus, 1.

DRYMOICA ERYTHROPTERA, JARDINE.

THIS species formed part of Dr. Gordon's collection of birds from Western Africa, but had no number of reference to his notes attached. We do not find any description agreeing with it in the works where birds from that country are mentioned; and the conspicuous rufous colour of the wings, from which we have named it, would have been an easy mark of detection. There is a great alliance between this bird and a few others, to the Indian form which we know under the designation of *Prinia*, and which, if the characters are found to agree, must be from priority the name used for the whole. In Africa, they are extremely numerous, much more so than in India; the greater number of them are larger, stronger, and more robust, and for the present, we prefer retaining *Drymoica* for the African form to joining them with *Prinia*.

The forehead, back, and shoulders, are a pale reddish-grey, very distinctly separated from the light under parts. The shoulders, lesser-covers, and edges of the quills and secondaries, with the upper tail-covers, are clear reddish chestnut-brown; quills and secondaries, with the tail, umber-brown; the latter, with a white tip and dark bar succeeding it, much graduated and of a slender form. The chin and throat nearly pure white, gradually shading into yellowish wood-brown, which becomes darkest on the vent, thighs, and under tail-covers; bill is of considerable strength, black, except the base of the maxilla, which is yellow; tarsi, feet, and claws, yellowish-brown.

Entire length, 5. 3; bill to forehead, 4; to gape, 8; wing, 2. 2; tail, 2. 1; tarsus, 9.

Drymonia erythrophora Ford.

Feb. 2, 1869.









Hirundo albogularis. Stricki.

1848.

HIRUNDO ALBIGULARIS, STRICKLAND.

I HAVE long possessed a specimen of this bird, but was unacquainted with its locality till lately, when I procured a second individual, in a collection of birds from South Africa, which I therefore conclude to be its true habitat. As, however, I find no such bird in the works of Le Vaillant or Dr. Smith, and as no specimen exists in the British Museum, I conclude it to be a rare and probably new species. Lesson's description of *Hirundo rufifrons* (Traité d'Orn. p. 268), is apparently meant for this bird; but the true *rufifrons*, Shaw (Le Vaill. Ois. Af., pl. 245, f. 2) has the whole throat and upper breast black.

Front, deep ferruginous; whole upper parts glossy blue-black; feathers of the nape and upper back whitish at their bases; wings and tail, blue-black; rectrices, except the two middle ones, with a large medial, subquadrate white patch on the inner webs, extending from the shaft to the margin, and becoming longer and more acutely pointed on the outer rectrices; lores, and lower margin of eyes, black; chin and throat, pure white; a distinct black bar across the upper breast; rest of lower parts white, with a very pale greyish tinge; lower wing-covers, white; beak and legs, black.

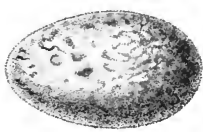
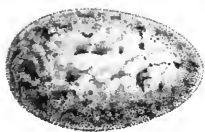
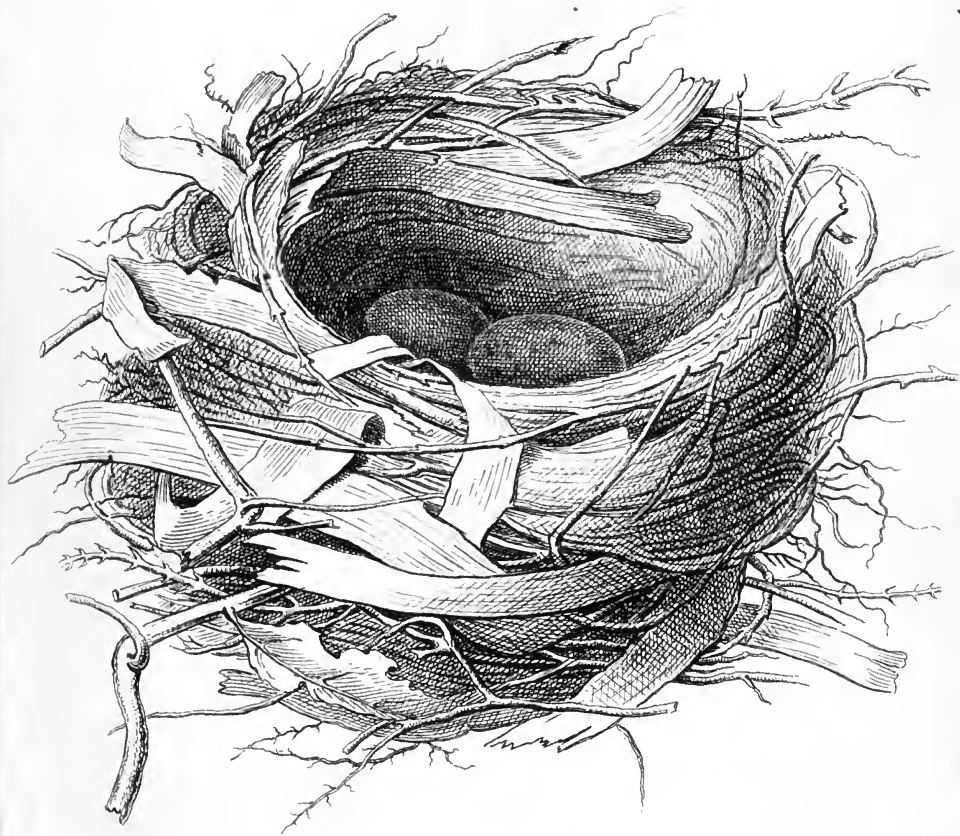
A typical *hirundo*. Tail deeply forked; the external rectrices narrow and elongate; secondary quills, and three or four of the proximate primaries, considerably emarginate at the tips; first quill longest.

Total length, 7; beak to front, $3\frac{1}{2}$; to gape, 5; wing, 5.2; medial rectrices, 2; external, 3.4; tarsus, 5.—*Strickland, February, 1849.*

ILLUSTRATIONS OF FOREIGN OOLOGY.

TANAGRA CANA, SWAINSON.

Mr. SWAINSON gives Brazil as the native country of this bird. We possess it from Bogota, and have received specimens of what we consider to be only a variety of it from Mr. Kirk, our correspondent in Tobago, to whom also we are indebted for the nest and eggs now represented. "The blue bird builds on middle sized trees, and lays from three to four eggs." In structure, the nest shows considerable resemblance to that of some of the buntings, and the colour and marking of the eggs is somewhat intermediate between that of the buntings and finches. The eggs varied, as represented in our plate; and a third was nearly intermediate in the distribution of the markings. The foundation of the nest is composed of dried leaves, roots, small sticks, &c. The upper part is formed of the leaves of some reed like plant, intermixed with slender roots and tendrils of some creeper. The inside showed almost no lining, and is formed of the same dried reeds, and a few finer tendrils with a single feather. Our plate is slightly less than the original, the interior diameter being nearly three inches.



Tanager cana.
1849.







Momotus gularis de la Fresn.
October 1848.

MOMOTUS GULARIS, LAFRESNAYE.

Prionites gularis, *Lafresnaye*, in *Rev. Zool.*, 1840, p. 130.

THIS elegant little Motmot conducts us at once from the larger species to the diminutive *Hylomanes momotula* of Lichtenstein, and seems to justify us in reuniting under one genus the closely allied groups of *Momotus* and *Hylomanes*. It also serves to illustrate the close and indisputable affinity between the Motmots and the Bee-eaters, an affinity which is by no means so generally recognised as it ought to be. I should be inclined to regard *Momotus* as merely the American form of the sub-family, *Meropinae*, just as the Cuckoos, the Barbets, the Trogons, and the Parrots, have each their peculiar generic forms in the old world and the new. In *Momotus* and in *Merops*, we have the same lustrous sea-green plumage, the prevalence of a black streak through the eye, and of a black spot on the breast, an almost identical form of foot, and a similar prolongation of the medial rectrices. *Momotus* is mainly distinguished by the rounded form of the wing, in accordance with its more indolent habits, and by the serration of the mandibles, a character of little weight in questions of affinity, as it breaks out, *pro ré natâ*, in many remote groups of birds, unaccompanied by any other peculiarity of structure.

Momotus gularis was first described by Baron de Lafresnaye. It inhabits Guatemala, and appears to be very rare. The upper plumage is a bright sea-green, passing into blue towards the end of the tail; sides of face round the eyes, light chestnut, with an oblong black spot on the ears; throat azure blue, a black spot on the breast, formed of two or three elongate feathers, as in other species of *Momotus*; lower parts pale green, with a fulvous lustre, passing into light azure on the belly, and into chestnut on the lower tail-covers; lower wing-covers, and inner margins of remiges, also chestnut; beak horn-colour, paler at the tip; feet brown.

Total length, 10; beak to front, 1.1; to gape, 1.4; height, 4; breadth, 4; wing, 3.9; medial rectrices, 5.8; external, 2; tarsus, 9; middle toe and claw, 9; hind ditto, 5½.—*H. E. Strickland.*

HOLOCNEMIS NÆVIUS, GMELIN.

SYN.—Wall-creeper of Surinam, *Edw. Birds*, pl. 346.—*Sitta nævia*, *Gm. Syst. Nat.* p. 442.—*Lath. Ind. Orn.*, p. 263.—*Lath. Syn.* vol. ii. p. 634.—*Shaw, Zool.* vol. viii. p. 114.—*Holocnemis flammatus*, *Strickland*, in *Ann. and Mag. Nat. Hist.* vol. xiii. p. 415, pl. 13 (female.)

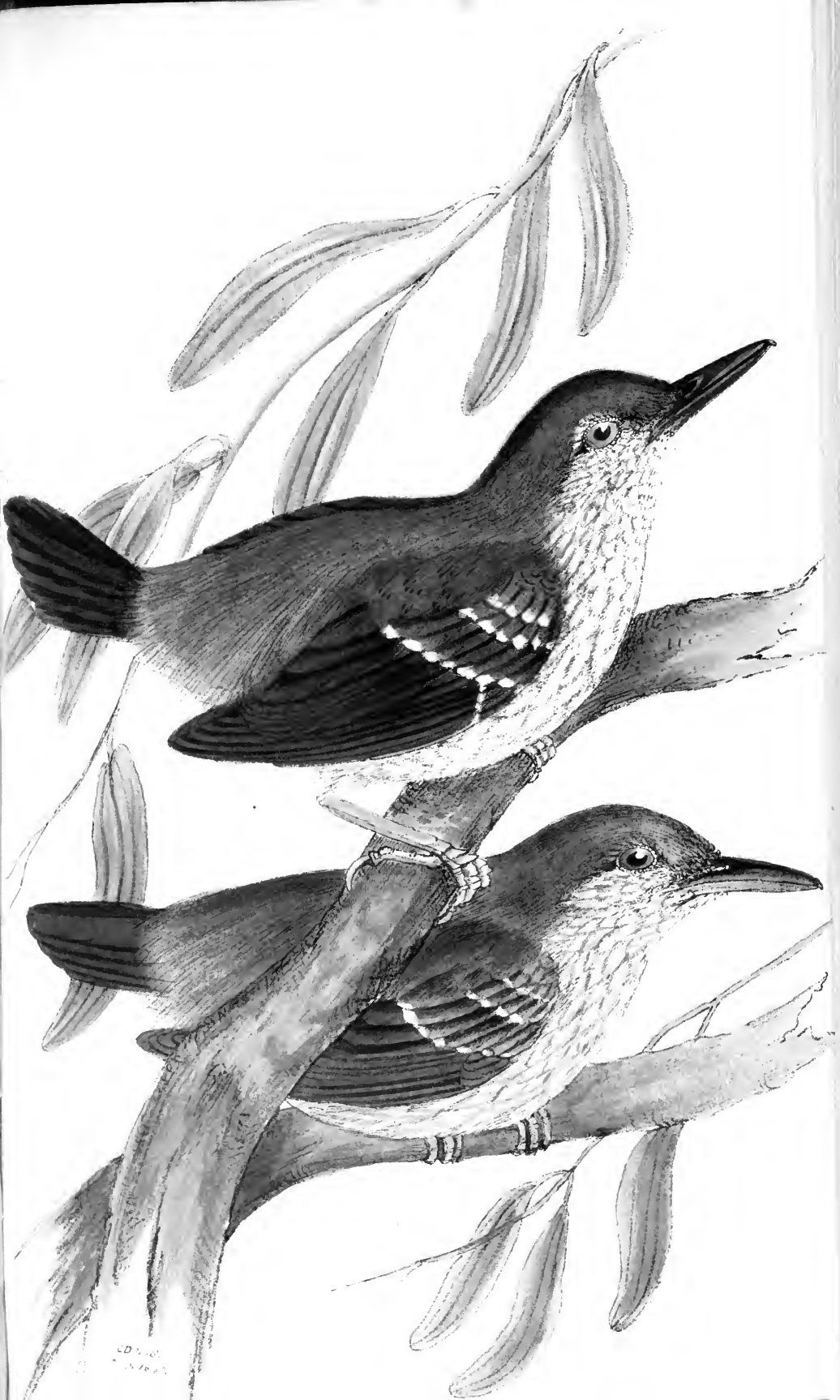
I DESCRIBED and figured the ♀ of this curious bird in 1844, in the *Annals of Natural History*, supposing it to be a new species, and adopted it as the type of my genus *Holocnemis*, distinguished from most other of the *Formicariinæ*, by the absence, or very slight indication of scuta on the tarsi. I subsequently suspected it to be identical with the “Wall-creeper of Surinam” of Edwards (*Sitta nævia*, auct.); but as Edwards describes his bird as of a “dark bluish lead colour,” I was unable to identify it with certainty. I recently, however, met with a pair of birds in the collection of T. B. L. Baker, Esq. of Hardwicke Court, Gloucester, which clearly prove, that Edwards’ bird is the ♂, and my “*Holocnemis flammata*” the ♀.

In my description of the latter bird I stated, that the habitat was unknown, but doubtless (reasoning from its organic structure, as we may often safely do) American. This conjecture is now confirmed; Edwards’ bird having been procured in Surinam, and Mr. Baker’s specimens in the adjacent, and comparatively little known island of Trinidad.

♂.—Dark slaty grey above, paler on the rump; wings nearly black, all the upper wing-covers with a sub-triangular terminal white spot on each feather; tail nearly black, rectrices obtusely pointed, the two external pair narrowly tipped with white; lower parts slaty grey, paler than the back; ear-covers with white shafts; throat white, mottled with slate grey; breast and middle of belly with a pointed white streak on each feather, bordered by slate grey, and the latter slightly margined with white; lower tail-covers with a white streak down the shafts, and a narrow white margin; beak horn-colour; feet and claws pale yellowish.

♀ Olive brown where the ♂ is slaty grey; otherwise similarly marked; lower mandible paler than the upper.

Total length, 6; beak to front, 5; to gape, 1; wing, 2.7; medial rectrices, 2; external, 1.8; tarsus, 9; middle toe and claw, 9; hind ditto, 7.—*H. E. Strickland.*







Ploceus personatus Vieill.
1848.

PLOCEUS PERSONATUS, VIEILLOT.

THIS very pretty species of *Ploceus* was procured for us by the exertions of Maxwell Hyslop, Esq. of Liverpool, and brought by the ships in the palm oil trade, preserved in spirits, from the vicinity of the Old Calabar river. From these we skinned and preserved our specimens of both sexes. And we mention this, that persons on a station, where time and opportunity are wanting to prepare specimens properly, may see that small birds, which can be put in spirits with very little trouble, will not be much injured afterwards. We do not recommend this practice, at the same time, under some circumstances, very valuable specimens may often be thus saved.

The figure most closely resembling our Calabar river specimens, is that in "*Vieillot's gallerie*;" but it is represented not nearly so pure or distinct in its colours. *Malimbus aurantius*, "*Vieillot Oiseaux chanteurs*," may probably be the female. The birds we represent, were put into the same bottle as ♂ ♀, and we have no reason to doubt the correctness of the tickets. We could not ascertain the sex upon dissection, the female, or perhaps males immature, and without the black head, were most abundant, probably three or four to one.

♂—Forehead, cheeks and throat, deep velvet black; crown, occiput, sides of the neck and breast, rich orange-yellow, shading into greenish-yellow on the back and upper parts, and into gamboge-yellow on the lower breast and under parts; wings and tail umber brown, margined with greenish-yellow; bill black; tarsi and feet flesh colour. ♀—Without the black head; crown and upper parts brownish-yellow; under parts gamboge-yellow, paler and slightly tinted with olive on the vent; wings and tail as in the ♂; bill brownish-black; tarsi and feet flesh colour.

♂—Entire length, 4; bill to forehead, 4; to gape, 5½; wing, 2.3; tail, 1.7; tarsus, 8. ♀—Nearly equal, slightly less.



Emberiza unicolor Lafresn
May 1849

PHRYGILUS UNICOLOR, TSCHUDI.

Phrygilus unicolor, Tschudi Wieg. Arch., 1844, p. 262. Tschudi and Caban. Fauna peruana, Ornith., p. 219. *Emberiza unicolor*, De Lafresn., Syst. av. D'Orbig., p. 262.

THIS modestly coloured bird is a native of Peru and Bolivia, having been met with by both D'Orbigny and Tschudi on the plains of Oruro in Bolivia, and on the Cordilleira of Tacora in Peru; and to this range may now be added that of the Andes, in the vicinity of Quito, reaching an elevation of from 13,000 to 14,000 feet above the level of the sea. The structure of this bird recedes considerably from that of the true buntings, and is perhaps more tanagrine than otherwise. There is no palatial knob, and the proportions of the quills vary slightly. The tarsi and feet are rather proportionally lengthened, together with the hind claw. Tschudi considers that it holds a place intermediate between *Euspiza* and *Fringilla*, differing from them chiefly in the longer and more compressed bill, want of the palatial knob, shorter wings and tail. He arranges them following *Zonotrichia*, and appears to consider that *P. gayi*, *atriceps* and some others from those ranges, form a separate group, which in all probability they do.

Above, the plumage is uniform blackish-grey, darker on the crown, and on the quills, secondaries, and tail, nearly black. The quills are margined with a narrow edging of pale greyish-white, which appears light and silvery on the dark quills. Below, and on the cheeks, the colour is of a uniform paler tint, nearly greyish-white on the vent and under tail-covers. The bill, tarsi, and feet, appear to have been pale umber brown.

Entire length, 5.8; bill to forehead, 5; to gape, 6; wing, 4.5; tail, 2.5; tarsus, 9 to 1.

TÆNIOPTERA ALPINA, JARDINE.

WE cannot identify this species with any of those described in works devoted to the natural history of Chili or Peru, though it seems to resemble the bird figured by Tschudi, under the name of *Ptyonura albifrons*. As already stated, it occurs on the highest ridges of the Andes, rarely descending below the snow limit; and from its general appearance, at once conveys the idea, that it performs there the office of the saxicoline birds of Europe.

The crown, cheeks, nape, back and wings, are brownish-grey, having in some specimens a more umber tint; the quills are brownish-black; from the nostrils to the eyes, and shading gradually over them is white; the rump, upper tail-covers and tail are black—the outer feather of the latter edged with greyish-white; the throat and breast are pale brownish-grey, shading into white on the belly, vent, and under tail-covers; the bill, the feet, and tarsi, are black—the latter very saxicoline in form.

The entire length, 7; bill to forehead, 6; to gape, 9; wing, 4.9 to 5.1; tail, 3.4 to 5; tarsus, 1.2 to 3.



Tenioptera alpina Jara.
June 1842.



SAXICOLA OPISTHOLEUCA, STRICKLAND.

Saxicola leucura, Blyth, in Journ. As. Soc., Beng., vol. xvi. p. 131.

THIS is evidently the bird referred to as *Saxicola leucura* by Mr. Blyth, as he states it to differ from his *S. picata* only in having the breast and belly black, while in the latter species they are white. As I have before me specimens of *S. picata*, I can confirm Mr. Blyth's statement of the close agreement in size and coloration of these two birds. They form in fact a parallel case to that of the *Saxicola aurita* and *S. stapanina* of South Europe, which only differ in the presence or absence of black on the throat, and whose specific distinctness is still a matter of controversy among naturalists. It is very possible, that some species of *Saxicola* may, at certain periods of life, assume additional portions of black or white into their plumage, just as many of the rufous *Tchitreæ* (*Muscipetæ*, Auct.) acquire more or less of a white coloration in old age. This may perhaps account for the immense number of species of *Saxicola* described by Rüppell, Ehrenberg, and others, as inhabiting the deserts of Africa and Western Asia. Conformably with this view, we find that in a specimen of *S. opistholeuca* before us, some of the black abdominal feathers are narrowly tipped with white, as if in the act of changing colour. Further researches, however, are required to decide this question; and meanwhile we have no choice but to regard *S. opistholeuca* as distinct from *S. picata*, until their identity be proved.

Saxicola opistholeuca agrees closely in coloration with *S. leucura* (*S. cachinnans*, Temm.) of Europe, but is considerably inferior in size. It also differs in having the lateral rectrices tipped by a continuous patch of black, while in a specimen of *S. leucura* before me, they have merely a longitudinal black spot on each side, separated by a white space, which extends to the extreme tips.

The whole head, neck, upper back, wing-covers, breast, belly and lower wing-covers, deep sooty black; remiges and primary covers fuscous, narrowly edged with pale rusty; secondaries narrowly tipped with whitish; tibiæ mixed brown and whitish; rump,

ILLUSTRATIONS OF ORNITHOLOGY.

vent, upper and under tail-covers and greater part of tail, snow white; medial pair of rectrices black at the extremities, for about one and a half inch, and the remainder for about half an inch. Beak and feet black. Female similar, but brown where the ♂ is black.

Length, 5.7; beak to front, 5; to gape, 7; wing, 3.7; medial and external rectrices, 2.7; tarsus, 11.

The specimen here figured was procured by Captain Boys in Northern India, and is now in the collection of P. L. Selater, Esq., Corpus Christi College, Oxford. Mr. Blyth states, that it is common about Agra.—*H. E. Strickland.*





Nectarinia natalensis, *Jard.*

var. Zanzibar.

Augst. 1849.

ILLUSTRATIONS OF ORNITHOLOGY.

NECTARINIA NATALENSIS, JARDINE.

Var. Zanzibar.

Mr. EDWARD WILSON having purchased Mon. Bourcier's collection of *Nectariniæ* for his brother's extensive ornithological museum in New York, kindly transmitted them to me for examination before being sent abroad. The collection was accompanied by M. Bourcier's list of the species, to which M. Verreaux, the well known collector in Paris, had added observations chiefly based upon his experience of these birds, gained during his residence at the Cape of Good Hope. In the list of the former, the species which we have now figured was marked "espece nouvelle;" but M. Verreaux observes regarding it, "Cette espece indiquè comme nouvelle sur le catalogue de Bourcier, ne m'a jamais paru d'être la memê que celle decrit et figuré par Sir W. Jardine dans le Nat. Lib. pl. 12.—Tous les individus que j'ai vu venant du cap, n'étoient jamais du meme rouge vermillon de cette individu que j'ai vu venir assez souvent de Zanzibar, j'engage dont Sir W. Jardine a bien comparer les deux oiseaux, que je regard comme deux especes parfaitement caracterisées, et veuillez je vous prie, m'en faire savoir le nom."

On comparing this bird with M. Bourcier's specimen of *N. natalensis* in its ordinary plumage, and my own specimen, which was used for the figure referred to by M. Verreaux, the distribution of the markings is almost identical, as much so as in any two or three specimens slightly varying in size; my Natal specimen is rather larger than M. Bourcier's, and both are larger than the Zanzibar bird. The principal distinction is in the colour of the throat and breast, which M. Verreaux states is similar and constant in specimens from Zanzibar, in these the throat and breast are of a vivid vermillon red, whereas in the others the same parts are scarlet or a rich carmine red. In the Zanzibar specimen the coronal patch seems to extend rather farther back, but without seeing more specimens, this can scarcely be judged of. The dimensions of the three specimens now before us, are as follows:—

ILLUSTRATIONS OF ORNITHOLOGY.

JARDINE HALL SPECIMEN.— Entire length, 5. 9; bill to forehead, 1; wing to longest quill, 3.

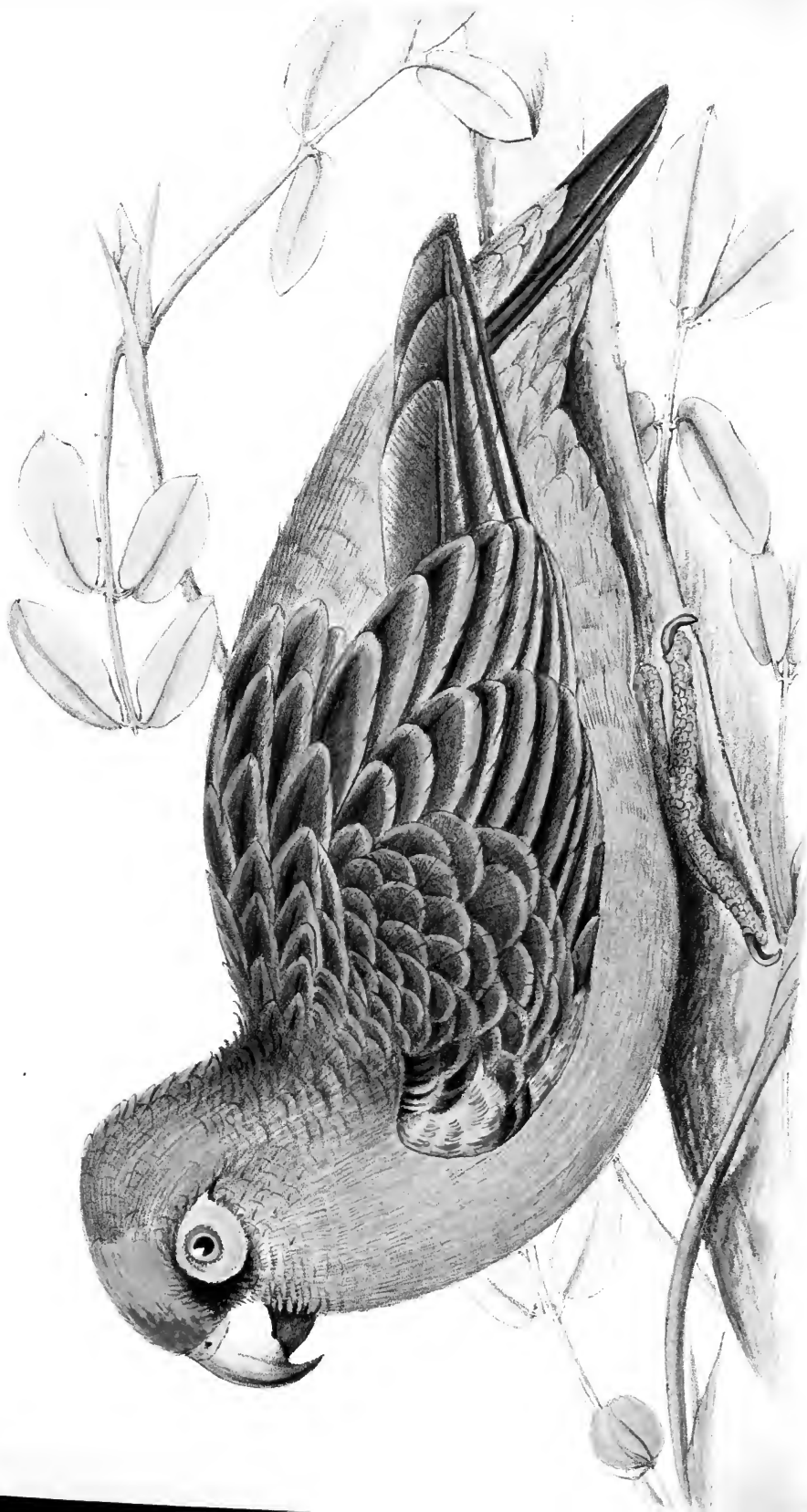
M. BOURCIER'S SPECIMEN.— Entire length, 5. 2; bill to forehead, 9; wing to longest quill, 2. 7.

ZANZIBAR SPECIMEN.— Entire length, 4. 5; bill to forehead, 9; wing to longest quill, 2. 7.

There is a considerable difference in the size of the three specimens; but the length of the wing, which is most to be depended upon, is the same in two of them, and not very different in the large one; upon the whole, we incline to consider the Zanzibar species as only a local variety.

Pionus gulielmi. Jard.

Augst. 1849.



PIONUS GULIELMI, JARDINE.

"CONGO JACK," the parrot represented on the accompanying plate, was brought home alive by my son from the West Coast of Africa, on his return from a three year's cruise in H. M. S. Favourite. Several birds were brought down from the river Congo, together with a large lot of the common grey parrot, *Psit. erythacus*, but possessing no accomplishments, and being unacquainted with the modern languages, one only of this species was retained. This form of parrot, belonging to Wagler's restricted genus *Pionus*, is very limited in Africa, they are *P. meyeri*, *flavifrons*, *rufiventris*, Rüpp., *rüppellii*, Gray, and probably *timneh*, FRAS., and after making every examination that has been accessible, we have been unable to reconcile the bird in our possession with the description of any of them. Since its arrival in this country, it has got into good health and fine plumage, and is now perfectly tame and gentle with those it is accustomed to, though it still expresses its distrust to strangers, or to a dog coming near it. Its accomplishments consist only of a whistle or scream. We have no information of its habits or food in Africa; on the voyage home it was fed on ground nuts, the seed of *arachis hypogea*, which it preferred to every thing else here so long as they lasted. Now, maize, millet and hemp seed are its chief food, the last being the most preferred.

It is difficult to measure a living bird accurately; but so far as we could, the dimensions given are nearly correct. The tip of the maxilla and the whole of the mandible, greyish-black; the base of the maxilla, cere and bare space surrounding the eye, flesh colour. The forehead and crown in a line with the posterior edge of the orbit; the bend and edge of the wing and lower part of the thigh (or garters as they are called) bright yellowish scarlet; the space between the eye and bill, and surrounding the lower part of the naked skin, greyish-black, which shades into greyish-green on the cheeks and auriculars; the occiput, nape, sides of the neck, breast and belly, are bright yellowish-green; the rump, vent, under tail-covers and thighs, greenish-yellow, the centre of the feathers tinted with yellowish-scarlet, giving in some lights a reddish appearance to those parts; the back and all the wings, except the quills, black,

ILLUSTRATIONS OF ORNITHOLOGY.

each feather edged with a bright green, darker in tint than that of head and neck; the green edges on the back being very broad, and in some positions having little of the black seen; on the wings, narrow, except on the greater covers, where they are broad and conspicuous on the outer webs; the tail is black, the two centre feathers cuneated, and having a very narrow green edge; tarsi and feet, greyish-black; claws, black.

The entire length, as near as could be ascertained, 10. 5; of wing to end of longest quill, 8.

MR. BLYTH, the curator of the Calcutta Museum, who has most zealously pursued the zoology of India, has lately forwarded to us a series of drawings of those species which run most into the European forms. Many of these are very remarkable, and increase genera to several species, which previously contained only a single one, or were extremely limited. These drawings are executed by a native artist, very minutely and accurately, but in most instances with an Indian mannerism; nevertheless, we have thought it better to give, as far as possible, fac-similes of them, than to attempt to introduce accessories. They will appear from time to time, and will have the advantage of Mr. Blyth's remarks.

ERYTHACA FLAVOLIVACEA, Hodgs., Fig. 1.

Nemura flavolivacea, Hodgs., in Proc. Zool. Soc., 1845, p. 27.—*Ianthia flavolivacea*, Blyth, in Journ. As. Soc. Beng., vol. xvi. p. 133, 474.

“THE genus *Erythaca*, typified by the common Robin of Europe, has hitherto been very limited in extent, containing, besides the type, only one or two little known species from the Japanese Islands (*Sylvia akahige*, and perhaps *S. komadori* of Temminck, Pl. Col. 570, 571). The researches of Mr. E. Blyth, Curator of the Asiatic Society's Museum at Calcutta, have, however, brought to light at least one more species of genuine *Erythaca*.”

This bird is thus described by Mr. Blyth:—“Upper parts uniform fulvescent olive; loral region and throat, rufescent white; rest of lower parts dilute rusty; beak dusky; base of lower mandible pale; legs pale. Total length, 5.5; wing, 2.8; tail, 2.3; tarsus, 1.1.”

He adds, in a note accompanying the drawing, “I consider this dull coloured species to be a typical *Erythaca*, having merely the bill somewhat more slender than in the European bird; and I have little doubt that the sexes will prove to be similar, as all that I have seen have been alike.”

Inhabits Nepal and Darjeeling.

IANTHIA HYPERYTHRA, BLYTH, Fig. 2.

Blyth, in Journ. As. Soc. Beng., v. xvi. p. 132.

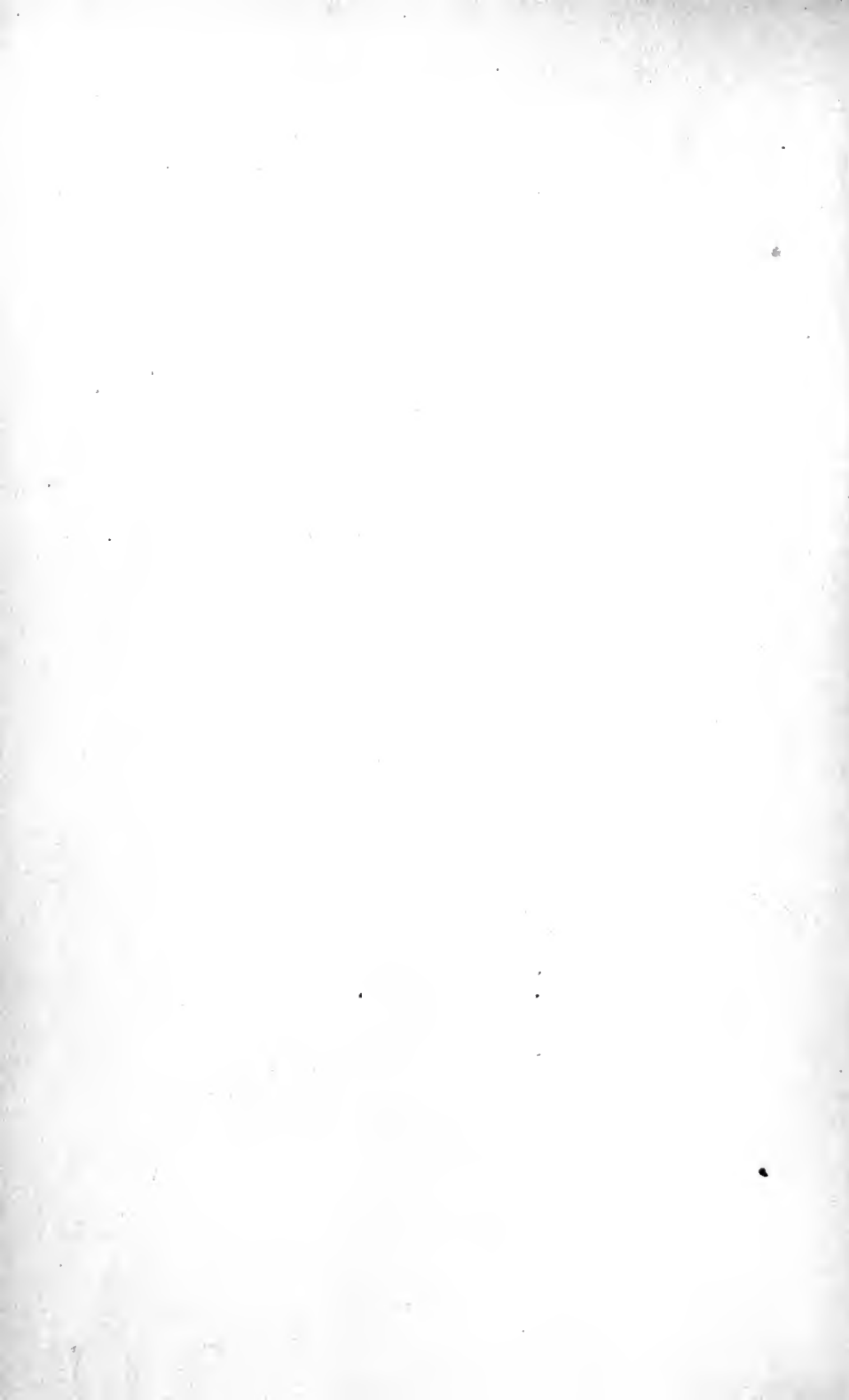
“THERE is in India, a group of birds, which if not generically identical with *Erythaca*, are evidently in close proximity with that genus. Two of the species are distinguished by the blue colour (most conspicuous in the males) of their upper parts, resembling herein the allied American genus *Sialia*. To these Mr. Blyth gives the generic title *Ianthia*, to which he assigns as characters, ‘a more delicate conformation than *Erythaca*; longer wings (reaching halfway down the tail); much weaker bill; longer and more slender claws, especially that of the hind toe, and the sexual diversity of colouring.’ The species thus classed are, 1. *I. hyperythra*, Blyth; and, 2. *I. rufilata*, Hodgson. I confess, however, that after a careful comparison of one of these (*I. rufilatus*), and of Mr. Blyth’s drawing of the other, with the British *Erythaca rubecula*, I do not see sufficient structural difference to warrant their generic separation, although we have not ventured to change the names attached by Mr. Blyth to the drawings which he has kindly sent us, and of which we now proceed to publish fac-similes.

“These blue robins present a remarkable analogy in colouring with the blue flycatchers of India (*Cyornis*, Blyth), and it seems not improbable that this analogy may be a true affinity, connecting the *Sylviadæ* with the the *Muscicapidæ*.”—H. E. Strickland.

“Upper parts of ♂ deep indigo blue, brightening to ultramarine on the forehead and above the eyes and upon the shoulder of the wing; the wings and tail black, the feathers margined with blue externally; lower parts bright yellowish ferruginous, confined to a narrowish streak on the middle of the throat and foreneck; lower tail-covers and centre of the belly white. The ♀ a rich brown above, approaching the colour of *Erythaca rubecula*; or rather, the feathers are merely tipped with this colour, showing more or less of the cinereous dusky tint within; tail blue, as in the ♂; the rump a lighter and more greyish blue; there is also a little blue on the shoulder of the wing, and a greyish blue supercilium brightening



1. *Erythaca flavolivacea*. (Bodg.)
2. *Tantrina hyperythra*. (Bodg.)



ILLUSTRATIONS OF ORNITHOLOGY.

posteriorly; lower parts tawny brown or subdued fulvous, except the lower tail-covers, which are white. Bill and feet, dusky in both sexes.

“Total length, 5.5; beak to gape, $5\frac{1}{2}$; wing, 3.1; tail, 2.3; tarsus, 1.

“Inhabits Darjeeling.”—*E. Blyth*.

PACHYCEPHALA MACRORHYNCHA, STRICKLAND.

“THE specimen here figured, was purchased by E. Wilson, Esq., from M. Ed. Verreaux, with the label—‘*Pachycephala albicollaris*, Amboina,’ attached. This name has, I believe, never been defined or published, and much confusion is caused by the objectionable practice of supplying museums with specimens which have these unauthenticated MS. names attached. It is not, however, on this ground, that I have altered the specific name invented by M. Verreaux, but because the designation itself is wholly incorrect, the bird being merely *white throated*, and not *white collared*, as the name *albicollaris* would imply. Indeed, the whole arrangement of the colours so nearly agrees with the well known *Pachycephala gutturalis*, *P. melanura*, &c., of Australia, that it would not be easy to found an appropriate title on the coloration alone, and I have therefore adopted the more expressive name of *macrorhyncha*.

“The discovery of a bird of the Australian genus *Pachycephala*, so far to the north as Amboina, is a very interesting circumstance, the more so as its peculiar form appears to furnish a clue to the true affinities of what has hitherto been an anomalous and puzzling genus. The small group of birds comprising the genera *Pachycephala* and *Eopsaltria*, has been classed quite at random by most previous writers, who seem to have had no idea of its real affinities, and have been content to place it, from some fancied resemblance, in the utterly remote American families, *Ampelidæ* and *Vireoninæ*. The bird before us, though unquestionably a true *Pachycephala*, is distinguished by a beak considerably longer and more compressed than in the other species. In this respect it offers so much resemblance to certain genera of *Laniidæ*, as to leave scarcely any doubt that the *Pachycephalinæ* ought to stand as an Australian subfamily of that extensive group. This view is confirmed by the observations of Mr. Gould, who has shown, that their habits are similar to those of the Shrikes, and who was the first to class them in that family. It is more especially the African subfamily of *Laniidæ*, comprising *Laniarius*, *Telophorus*, &c., to which the *Pachycephalinæ* show an affinity; and this relationship is indicated, not merely by the pecu-



Pachycephala macrorhyncha. Shickland.



ILLUSTRATIONS OF ORNITHOLOGY.

lar form of the beak, but by great similarity of colouring, as will be evident on comparing the African *Telophorus zeylonus* (Linn.) or *Laniarius olivaceus* (Shaw) with their Australian representatives.

“Crown and sides of head deep black; chin and throat white, below which is a narrow black band; lower parts, and a band across the nape, deep gamboge yellow; back and scapulars dark olive green, with a few obscure narrow transverse bars of black on the medial portion of some of the feathers; wing-covers and remiges dusky black, narrowly bordered with olive green; tail plain dusky black; beak black; feet flesh colour.

“Total length, about 7; beak to front, 7; to gape, $8\frac{1}{2}$; height $2\frac{1}{2}$; breadth, $2\frac{1}{2}$; wing, 3.8; medial and external rectrices, 3.1; tarsus, 9; hind toe and claw, 6; middle ditto, 8; outer toe about 1 longer than the inner.”—*H. E. Strickland.*

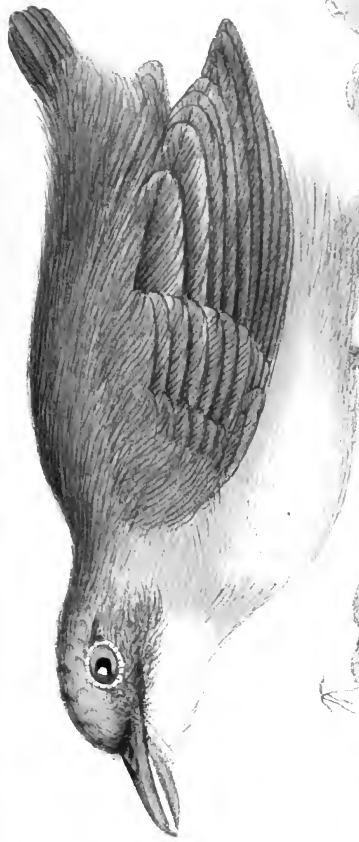
BRACHYPTERYX POLIOGENIS.

"THIS curious bird was obtained by Mr. Wilson from M. Verreaux, with the words '*Myiothera poliogenys*, Boie, Borneo,' attached. It evidently belongs to the genus *Brachypteryx* of Horsfield, but differs from his type-species in the shortness of its tail, which gives it a great analogy (though in my opinion no affinity) to some of the American *Formicariinæ*, such as *Formicarius*, *Leptorhynchus*, &c. Like the other Timaliine birds which abound in the Malasian Archipelago (*Malacopteron*, *Macronus*, &c.) the rump feathers are remarkably long and dense, and when expanded laterally, seem admirably adapted to protect the bird from tropical showers.

"I have altered the spelling of the specific name from *poliogenys* to *poliogenis*, as the former word would imply *grey-bearded* instead of *grey-cheeked*.

"Crown dirty brown, with a rufous tinge; back and wings pure brown, passing into tawny towards the rump; rectrices fuscous brown, margined with rufous; circuit of the eye and cheeks pure grey, passing into black towards the angle of the mouth; lores whitish; chin white; breast, sides, lower wing-covers, thighs, and lower tail-covers, pale tawny; middle of belly white; upper mandible corneous; lower whitish; feet and claws pale yellowish.

"Total length, 4.5; beak to front, 6; to gape, 7½; wing, 1.5; medial rectrices, 1.2; external, 1.1; tarsus, 1.1; hind toe and claw, 6; middle ditto, 8."—*H. E. Strickland*.



Brachyphrys poliozona

1842
S. 1842
S. 1842



Pericrocotus minor

PERICROCOTUS MINUTUS.

“MR. WILSON purchased this beautiful little species from M. Verreaux, under the MS. name, ‘*Phœnicornis minutus*.’ The locality is stated to be Borneo. In the same collection is another specimen, also from Borneo, slightly larger, with the wing $\frac{1}{2}$ longer, and the beak a mere trifle longer and broader; but in all other respects of form and colour the two birds are identical. I do not, therefore, venture to separate them, although M. Verreaux has labelled one specimen with the title, ‘*Phœnicornis brevirostris minor*.’

“The plumage of this bird closely resembles that of the larger scarlet and black species of *Pericrocotus*, viz.—*P. speciosus*, *miniatus*, *flammeus*, and *brevirostris*, from all of which it is at once distinguished by its diminutive size, which does not exceed that of the small grey-headed *P. peregrinus*.

“♂. Whole head, neck, and upper back, deep glossy black; wings black; first and second primaries plain black; third and fourth with a sub-basal yellowish spot on the inner web; rest of primaries, and all the secondaries, with a large medial patch of scarlet covering both webs, but divided by the black shaft; greater wing-covers largely tipped with scarlet; tertials plain black; tail black, the four lateral pair of remiges largely terminated with scarlet; rump, upper tail-covers, breast, and lower parts, vivid orange scarlet; lower-wing covers orange yellow; beak and legs black.

“♀. Grey above; wings and tail black, marked with orange yellow; rump and upper tail-covers orange scarlet; lores, chin, and lower parts yellowish.

“Total length, 5.7; beak to front, 4; to gape, $5\frac{1}{2}$; wing, 7; medial retrices, 2.5; external, 1.4; tarsus, 6; middle toe and claw, 6; hind ditto, 4.”—*H. E. Strickland*.

CHAPTER I

The first part of the history of the United States is the history of the colonies. The colonies were first settled by Englishmen in 1607. They were at first dependent on England, but they gradually became more independent. In 1776 they declared their independence and became a new nation.

The second part of the history of the United States is the history of the war of 1812.

The third part of the history of the United States is the history of the civil war.

The fourth part of the history of the United States is the history of the reconstruction period.

The fifth part of the history of the United States is the history of the Gilded Age.

The sixth part of the history of the United States is the history of the Progressive Era.

The seventh part of the history of the United States is the history of the World War I period.

The eighth part of the history of the United States is the history of the World War II period.

The ninth part of the history of the United States is the history of the Cold War period.

The tenth part of the history of the United States is the history of the present.





21
18.

Cyanocorna manus. Dubus?

CYANOCORAX NANUS, DUBUS.?

Cyanocorax nanus, *Dubus*, in Bulletin Acad. Roy. de Bruxelles,
Revue Zoologique, 1848, p. 243.

THE Mexican bird above described by Vicomte Dubus, agrees in every respect with the specimen here figured, except as regards his expression, "gutturæ albocærulescente;" while in my bird the throat is deep blue-black. Should it prove to be distinct, I would propose for it the name of *Cyanocorax pumilo*.

This elegant little bird is about the size of *Turdus musicus*, and is probably the smallest species, not only of its genus, but of the whole family of *Corvidæ*. But small as it is, the curved culmen of the beak agrees rather with that of the robust blue crows (*Cyanocorax*) of South America, than with the slender formed blue jays, (*Cyanocitta*) of Mexico and North America.

Plumage deep indigo-blue, brightening into Prussian blue on the crown, hind neck and upper breast, and passing into blue-black on the throat and chin; front, lores, and ear-covers, deep black; a narrow line of bluish-white feathers extends across the front and over each eye to the temples; remiges and rectrices black on the under sides; beak and feet, black.

Total length, 9.2; beak to front, 8½; to gape, 1; height, 3; breadth, 3½; wing, 4.5; medial rectrices, 4.5; external, 3.8; tarsus, 1.2.

I received this rare and beautiful species from Guatemala. —
H. E. Strickland.

PHYLLOSCOPUS TRIVIRGATUS.

“*Sylvia trivirgata*, Temm.” — Verreaux MS.

THE genus *Phylloscopus*, of which three species inhabit the British Islands, attains its greatest development in continental India, where Mr. Blyth has discovered and described numerous species. Some of these, instead of being unicolorous on the upper parts, as in the majority of *Phylloscopi*, exhibit a yellowish streak on the crown, and thus lead us to the genus *Regulus*, which is distinguished by the vivid tint of its coronal feathers. The bird before us belongs to this aberrant division. It inhabits the Island of Java, from which we already possess another species of true *Phylloscopus*, *P. javanicus* (Horsf.) In plumage it greatly resembles the broader billed but closely allied *Culicipeta burkei* of India.

Middle of crown olive yellow, which occupies the inner webs of the feathers, the outer webs being deep fuscous, nearly black, with an olive tinge, forming a broad dark stripe on each side of the crown. Between this and the eye is a superciliary streak of clear yellow; a streak of fuscous passes through the eye; the cheeks, throat, and lower parts, are light yellow, with an olive tinge; back and wings yellowish olive; remiges and rectrices fuscous, margined externally with yellowish olive; beak horn coloured; base of lower mandible pale; legs brown.

Total length, 4; beak to front, 4; to gape, 5; wing, 2.2; medial rectrices, 1.8; external, 1.6; tarsus, 7.—H. E. Strickland.



Pyrosphrys grammiceps.
Phylloscopus trivirgatus.

Nov. 1849.



PYCNOSPHRYS GRAMMICEPS.

"*Sylvia grammiceps*,"—Verreaux, M S.

THIS curious little bird appears to belong to a new genus, which I propose to designate *Pycnosphrys*, from $\piυκνός$, thick, and $ὀσφρῶς$, the rump or loin, in reference to the length and density of the uropygial feathers. Its affinities are not easily determined. With the general form and coloration of a Sylviine bird, it unites the beak of the *Muscicapidae*, and the dorsal plumage of the *Timaliinae*. It must probably be regarded as belonging to the *Muscicapidae*, in which family we find at least one genus (*Philentoma*) possessing the same development of the dorsal feathers, though in other points of structure they are very distinct, the beak of *Philentoma* being more depressed, the rictal bristles longer, and the tarsi proportionally shorter,

GENERIC CHARACTER.—Beak moderately depressed, the length almost double the breadth; sides nearly straight, very slightly concave; the culmen rather sharp, straight for its basal third, then gradually curved to the tip, which is emarginate and slightly overhangs the lower mandible; margin of upper mandible very slightly decurved; lower mandible nearly straight; gonys gradually curved upwards; nostrils ovate; rictal bristles about half the length of the beak; wing of moderate length, rounded; first quill short, fourth and fifth longest; uropygial feathers, very long, thick, and decomposed; tail rather long, narrow, the rectrices pointed; tarsi (for a Muscicapine bird) long; acrotarsia and paratarsia entire; toes moderately long; external toe very slightly longer than the inner; claws moderately curved, slender, acute.

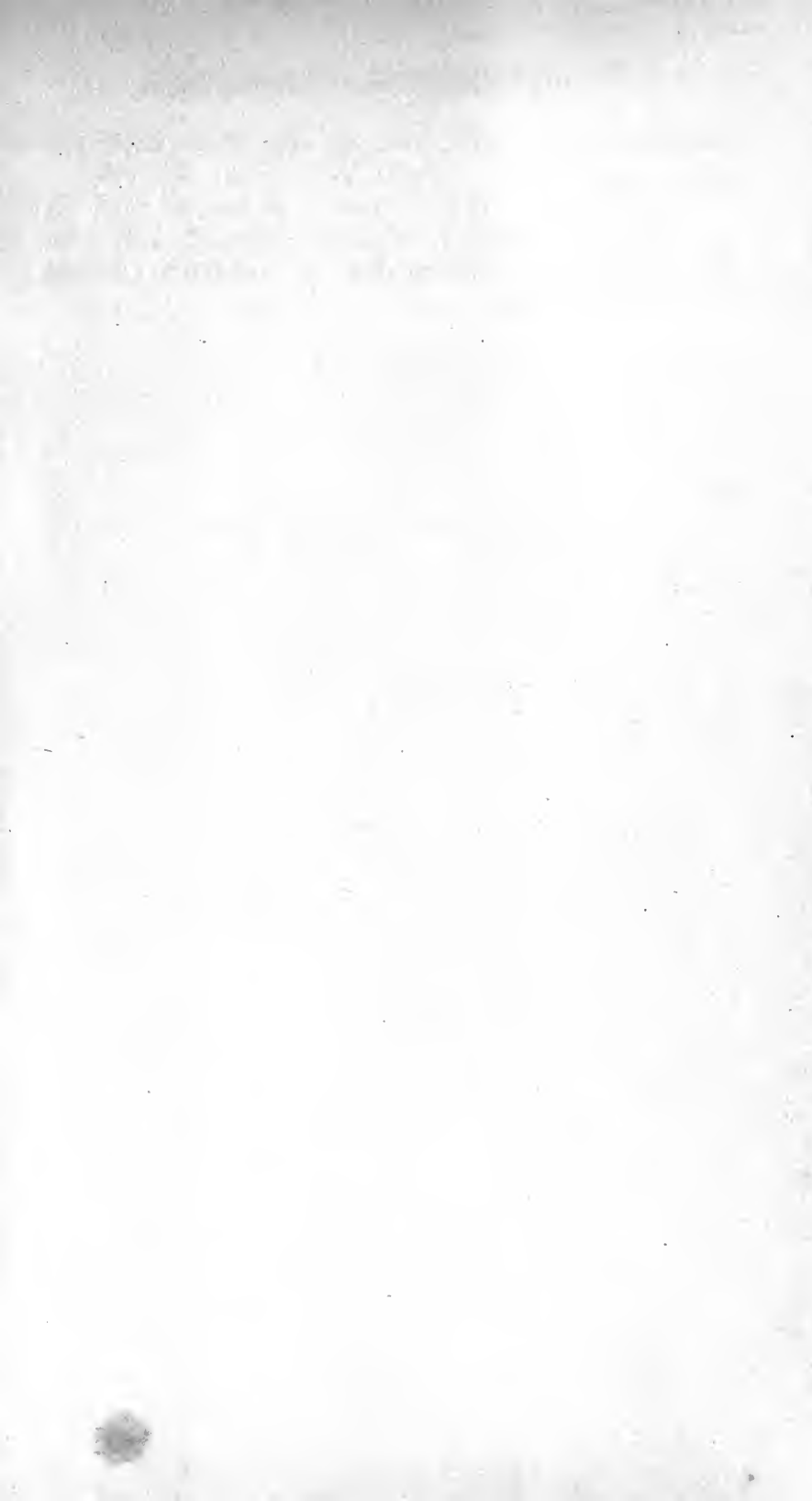
Head, nape, and cheeks, deep ferruginous, with an indistinct fuscous stripe on each side of the crown; upper back greyish-brown; wings yellowish-olive; middle and greater covers tipped with yellowish-white; rump-feathers long, silky, and pure white; tail fuscous, margined externally with yellowish-olive towards the base; the outer pair of rectrices narrowly margined internally, and externally at the base, with whitish; chin whitish; breast tinged with

ILLUSTRATIONS OF ORNITHOLOGY.

ferruginous ; belly, sides, and vent, silky white ; thighs yellowish-olive ; upper mandible fuscous ; lower whitish ; legs brown.

Total length, 3.7 ; beak to front, 3 ; to gape, 5 ; wide, $1\frac{3}{4}$; high, $1\frac{1}{4}$; wing, 1.9 ; medial rectrices, 1.7 ; external, 1.6 ; tarsus, $6\frac{1}{2}$; hind toe and claw, 4 ; middle ditto, $4\frac{1}{2}$; external, $3\frac{1}{4}$; internal, 3.

—*H. E. Strickland.*



Trichostema celebense, (Strackland)
T. *ambrosioides*, (Zenker, MS)

Nov. 1844.



TRICHOSTOMA UMBRATILE.

(Hind Figure).

AMONG the birds lately purchased by Mr. Wilson from M. Verreaux, and obligingly communicated to us by the former gentleman, are two distinct species, which resemble each other considerably in colour, and which M. Verreaux seems to have confounded together, as both birds bore the same MS. title "*Napothera umbratilis*, Temm." The localities however are different, one being from Borneo and the other from Celebes. The above specific name being, I believe, unpublished, I have no means of deciding which of the two species M. Temminck intended to designate *umbratilis*; but not wishing to supersede this title altogether, I have retained it for that species, which, from its pure umber colour, seems best to deserve the name.

These two birds belong to that peculiar Malasian group of shrike-like or thrush-like birds, distinguished by the density of their dorsal plumage, of which the genus *Timalia* is the type. In the general form of their beaks they approach *Malacopteron*, Eyton, and *Goldana*, Blyth; but the considerable development of the rictal bristles refers them to a separate genus, which Mr. Blyth terms *Trichostoma*.

The species to which I retain the specific name *umbratile*, inhabits Borneo; and in the length of the rictal bristles and breadth of the beak, makes the nearest approach to Mr. Blyth's typical *Trichostomæ*. The whole upper plumage is rich rufous brown, darkest on the head, and becoming more rufous on the outer margins of the secondaries and rectrices; chin and middle belly whitish; breast and sides dirty brown; beak dark corneous; legs pale; first, second, and third primaries, graduated; fourth, fifth, and sixth, equal and longest.

Total length, 5.7; beak to front, 6; to gape, 8; wide, 3; wings, 3; medial rectrices, 2.5; external, 2.2; tarsus, 7; hind toe, 4; middle ditto, 7; rictal bristles, 5.—*H. E. Strickland.*

TRICHOSTOMA CELEBENSE, STRICKLAND.

(Front Figure).

THE other specimen which M. Verreaux labelled *Napothera umbratilis*, is from Celebes, and is very similar to the Borneo species, but has the beak considerably narrower and the rictal bristles somewhat shorter and less rigid; the wings and tail are a more decided rufous; the breast is faintly tinged with brown; the beak is a lighter brown, with the under mandible palest, and the legs are plumbeous or brown; the feet and toes are considerably longer and stronger, as will be seen by comparing the measurements of the two species.

Total length, 5.7; beak to front, $6\frac{1}{2}$; to gape, 8; width, $2\frac{1}{2}$; wing, 2.7; medial rectrices, 2; external, 1.9; tarsus, 1; hind toe and claw, 6; middle ditto, 8; rictal bristles, 5; first, second, and third primaries, graduated; fourth, fifth, and sixth, nearly equal, but fifth rather longest.—*H. E. Strickland.*



Gildana capistrorides,

Nov 1849.



GOLDANA CAPISTRATOIDES.

“*Myiothera capistratoides*, *Temm.*”—Verreaux, MS.

THIS bird, like the “*Myiothera capistrata*” of Temm., Pl. Col. 185, f. 1, from the similarity to which it takes its name, belongs to Mr. Blyth’s genus *Goldana*, which differs from *Malacopteron*, Eyton, in the feebler and more slender form of the beak. It closely resembles *G. nigrocapitata* (Eyton), the chief difference being the darker colour of the cheeks in the present bird. Like all its congeners, it is distinguished by the long dense and downy texture of the uropygial feathers.

Crown and nape black, a white streak from the nostril over the eye to the hind head; lores, cheeks, and ear-covers, dark fuscous grey; back and wings nearly uniform ferruginous brown; rectrices fuscous, margined with ferruginous brown; chin and throat pure white; breast pure ferruginous, passing into whitish on the belly, and into ferruginous brown on the sides, vent, thighs, and lower tail-covers; upper mandible fuscous; lower, white; feet brown.

Total length, 6; beak to front, 6; to gape, 8; wing, 2.8; medial rectrices, 2.5; external, 2.2; tarsus, 1.1; middle toe and claw, 9; hind ditto, 7;

Inhabits Borneo.—*H. E. Strickland.*

PACHYCEPHALA ORPHEUS, JARDINE.

"*Hylocharis orpheus*, ♀."—Verreaux MS.

THIS bird, named on our plate *Hylocharis orpheus*, is another of the interesting species sent to us by Mr. Wilson, and the figure is now given to direct attention to those very curious but unobtrusive forms that appear to swarm over the islands of the Indian Archipelago. The generic name on M. Verreaux's MS. ticket, which is inscribed upon the plate, has been already applied to a genus of Humming Birds; but independent of that, after a close examination as to its proper position, we have been unable to separate it from *Pachycephala*, to the females of which it closely assimilates in colour and markings; and as we have already seen the figure of *P. macrorhyncha*, in our last Part, that the form reaches from Australia to the Indian Islands, the bird before us is of additional interest on that account. We give the description and measurements, and ask our friends to look out for us for the male of this species.—The ticket is marked *Timor*.

Above, the crown is of a greyish brown; the back is yellowish oil-green, shading into dull Indian yellow on the rump and upper tail-covers, and the tail is nearly of the same tint; the wings umber-brown; the outer edges of the quills and secondaries yellowish-white—beneath, the chin and throat are white; the breast and belly pale reddish ochre-yellow, shading on the vent and thighs to pale Indian yellow, and again on the vent and under tail-covers to clear and bright Indian yellow; bill dark umber brown; feet and legs grey or lead colour.

Length, 5; bill to forehead, 4; to gape, 7; wing, 2.9; tail, 2.5; tarsus, 9.



Hylocharis orpheus

Nov. 1849







DESCRIPTION OF SOME NEW SPECIES OF BIRDS.

BY

T. C. EYTON, Esq., F. L. S., &c.

NASICA BRIDGESII, EYTON.

NASICA, dorso coudaque ferrugineis, fronte verticeque brunneis lineâ lata superciliari, gulâ et singulis pennis pectoris, abdominis, crissique mediis partibus latè albis, his marginibus atris et brunneis fimbriatis: rostro, mandibula superiore atrâ, inferiore carneâ tarsi pedibusque atris.

Long. corp. 13; tarsi, 15; rost. front. 2.2.

This species may be at once distinguished from *Nasica longirostris*, by the more slender and curved bill, in which respect it approaches the genus *Xiphorhynchus*. The back and tail also are not nearly of so bright a ferruginous as in the first named bird. The first specimen I observed was in Lord Derby's museum, and was obtained by Mr. Bridges in the interior of Bolivia, since which time I have obtained one from the same source, and purchased another in Liverpool; one of my specimens has a few spots of white on the centre of each of the feathers on the back of the neck.

CAPITO SULPHUREUS, EYTON.

Capite atro coccineo, occipite cinereo, gulâ abdomineque sulphureis, pectore aurantiaco, hoc viridi strigato, reliquis partibus viridibus.

Long. corp. 5.5; rost. fronte, 7; tarsi, 9. Juv. adulto similis sed capite nigerrimo.

DESCRIPTION OF SOME NEW SPECIES OF BIRDS.

I observed the above new species of *Capito* in Lord Derby's museum at Knowsley; it is nearly allied to *C. richardsonii*, Gray, but differs from it in having the head black, and the tips of the feathers deep crimson, while in the latter, the feathers are entirely crimson, and not of so deep a tint.

CAPITO CAPISTRATUS, EYTON.

VIRIDIS fronte, genis lineâque superciliari cinereis, gulâ notâque supra naribus ad basin rostri atris, vertice, occipite capistroque læte aurantiacis, partibus inferioribus sulphureis viridi strigatis reliquiis viridibus, tarsis pedibusque atris, rostro marginibus flavis reliquis atratis.

Long. corp. 5.2; ros. fron. 8; tar. 9.

The above bird is nearly allied to *Micropogon haurtlaubii*, Rev. Zool. 1845, but differs from it in wanting the black band on the breast. Specimens of it are in the Knowsley Museum and my own. Mine were purchased from Mr. Warwick, but I am not aware of the locality from which they were obtained.

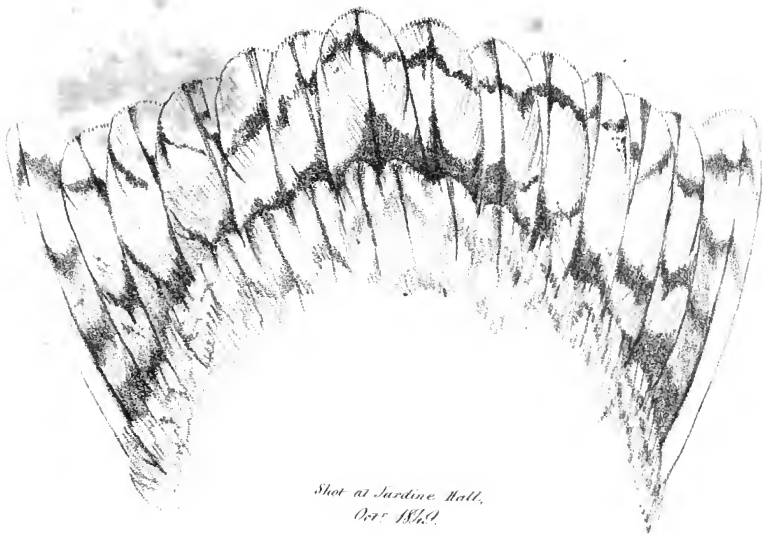
ANABATES FLAMMULATUS, EYTON.

ANABATES capite, pectore, collo dorsoque atris singulis pennis medio flavo brunneo latè strigatis, dorso imo rectricibusque alarum olivaceo castaneis, ventre crissoque ochraceo flavis similiter pectore strigatis caudâ ferruginea rostro pedibusque nigris.

Long. corp 3.5; ros. fron. 10; tarsi 1.1.

My specimen was obtained from New Grenada. I observed also two specimens in the Knowsley collection. The form of the bill in this bird precisely resembles that of *Anabates cristatus*, Spix.

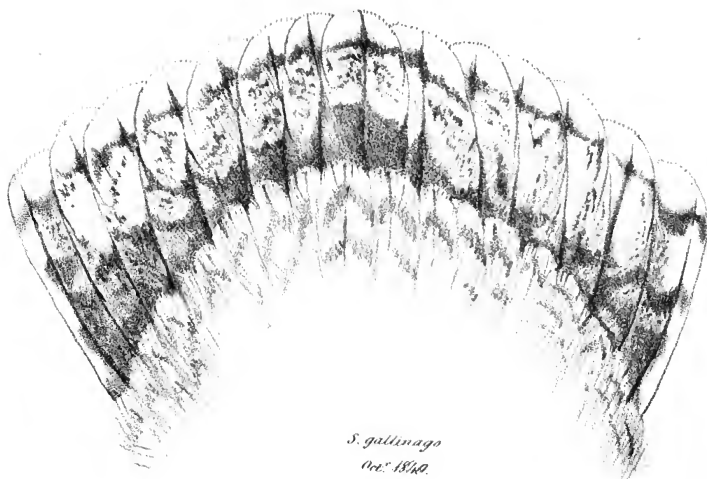




*Shot at Jardine Hall,
Oct. 1840.*



S. brevis from Ferrara, Italy.



*S. gallinago
Oct. 1840.*

NOTICE

OF SOME

NEW OR RARE BIRDS WHICH HAVE OCCURRED

IN THE

BRITISH ISLANDS IN 1849.

SCOLOPAX BREHMI, KAUP.

THE number of the feathers composing the tail of birds has been by most ornithologists considered of sufficient importance to form a specific distinction, where the species were otherwise nearly allied. This was the case in the genera *Scolopax* and *Phalacrocorax*. In the Snipes it was one of the first characters almost that were examined; but some ornithologists of great experience appear to consider *number* as of no specific consequence. Temminck states, that the common snipe possesses fourteen tail-feathers in its *normal* state, but that birds which have sixteen or twelve feathers, and otherwise, are very similar in plumage, are only *abnormal* variations from the ordinary or *normal* form; and from this opinion he makes the *S. brehmi* of Kaup, with sixteen tail-feathers, and the *S. peregrina* of Brehm, with twelve feathers, as only *abnormal* or occasional variations from *S. gallinago*. In like manner he carries out this theory with the cormorants. Of the *P. cormoranus* or *carbo* he writes: "Le nombre des penes caudales n'est pas un indice pouvant servir de caractere distinctif de l'espece; leur nombre, à l'état normal, est à la vérité de 14, mais nous avons vu des individus ayant seulement 12 penes, et plus rarement portant 16 rectrices."

Mon. Schlegel, in his "Revue critique," considers, that in the Snipes, described as *S. gallinago* and *brehmi*, "Le nombre et la

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distribution des teintes des plumes de la queue, sont sujets à varier selon les individus ;” and he does not allow either *S. brehmi* or *peregrina* to be species. But while holding this opinion in regard to the Snipes, he differs from Temminck in *Phalacrocorax*, for he writes : “ Il n’existe, dans l’Europe septentrionale, que deux espèces de cormorans, qu’il est aisé de distinguer, l’une de l’autre dans tous les âges, par le nombre des plumes de la queue.”

The only Snipe which we do know to have the number of the tail-feathers uncertain, is the remarkable *S. stenura* of India, which varies in having from twenty to twenty-six tail-feathers. In this bird the want of size and development of the tail seems to be compensated by numbers, and one or two pairs of the very abortive external feathers may occasionally be wanting. Those specimens of *S. major* which we have examined have been constant in the number of their tail-feathers, and the bird may be easily distinguished otherwise. So also are those of *S. wilsonii*. In *S. gallinago* the tail, when expanded, forms a perfect circle. In the *S. brehmi*, independent of number (sixteen tail-feathers), the outer feathers are longest, so as to form as it were a double fork. The occurrence of two Snipes with this structure, at Jardine Hall, in October last, induced us to announce its capture as the *S. brehmi*; and the accompanying illustrations of the form of the tail, the distinctions given by the Prince of Canino, with those observed in the specimens killed here are now given, with the view of drawing attention to the subject, and to endeavour to ascertain whether these variations in structure and number should be considered as specific, or only accidental state of the different parts.

On the 7th and 8th of October, the wind had been east and north-east, and a gale of considerable force. On the 9th and 10th the frost was hard, and a good deal of ice on the springs, and on these days there were a large number of Snipes on all the higher grounds. They lay very close, were evidently fatigued, and were no doubt portions of a flight on their passage. Eight were put up from a few rush bushes, growing in a space of twenty yards square, from which the specimen alluded to was shot. Next day scarcely a Snipe was to be found.

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URIA LACRYMANS.

SPECIMENS of this bird were sent to us this summer from the coast of Caithness, by the attention of Mr. R. Shearer of Thrumster. The accompanying letter stated, that it is found in considerable abundance around the rocky shores. They commonly sit mixed with the common Guillemot, but are too far distant to be distinguished, and are therefore only obtained accidentally. If, however, a Guillemot is observed on a ledge of rock by itself, and within range of shot, it seldom fails to be one of the bridled sort; and although it may be considered rare in comparison with the common Guillemot, which breeds in thousands, it may be found on all our east coast, extending from Wick to the Ord Head.

OCCASIONAL VISITANTS TO ORKNEY.

A NOTE from Mr. Heddle, the co-author with Dr. Blackie of *The Natural History of Orkney*, dated 13th April last, mentions, that "a long succession of easterly gales brought us the other day two grey Shrikes, a willow Warbler, and a hedge Accentor, all with us extremely rare visitants."

BREEDING PLACE OF *THALASSIDROMA PELASGICA*.

A NOTE from the Rev. Henry Graham, Iona, describes the breeding place of this bird on the small island of Soy, about three miles south of Iona. "The nest is formed in a burrow, varying from three to four feet deep; they are made in the grassy banks; the soil being soft and unctuous, cuts with a spade like new cheese; the nest itself is formed of a little dried grass or moss; the birds make no attempt to escape when their nest is dug up. I should add, the burrows all face to the north, and are about eighty feet above the level of the sea." From the date of the above note, the birds would arrive at their breeding place about the beginning of July, and are very late in breeding; for a second note, in reply to some queries,

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dated 22d October, was accompanied with a specimen of the young, only about half fledged, which had been procured on the 13th, and stated, that they would be fully fledged in a week or so. Mr. Graham adds, "The burrows are most undoubtedly made by the birds themselves; the entrance is large, and has the appearance of a rabbit hole; but from this there branches off two or three small passages, penetrating deep into the bank, and each of which is occupied by a nest; the nest is not at the extreme end of the passage, for it extends beyond, and when disturbed, the birds retreat off the nest to the farthest end of the hole."

BOSCHAS BIMACULATA.

MR. GOULD writes, that a specimen of this bird was sent to him in December for inspection, by Gardener of Oxford Street. "It was a male, somewhat indistinctly marked about the neck, but in other respects agreed with Vigors' specimen. It had been caught in a decoy in Norfolk, and I believe sent to Leadenhall market."

BRITISH DISTRIBUTION OF *MOTACILLA BOARULA*.

THE instances of this species incubating to the southward of Yorkshire are exceedingly local, and its appearance as a winter visitant is even accounted somewhat rare. Mr. Gould writes, in reply to some other queries, "During a trout excursion in June last, to Chemies* in Buckinghamshire, Mr. John Dodd called my attention to a species of Wagtail, which had built its nest in a rose bush, trained against a wall in his garden. Judge my surprise when I there found a beautiful black-throated *M. boarula*, sitting on four eggs, and so fearless of observation as almost to admit of my touching her. Mr. Dodd permitted me to take the eggs for my son's collection; and a greenfinch having a nest close by, four of its eggs were transferred to that of the Wagtail; they were hatched in

* Chemies is about twenty-five miles north-west of London, situate in a beautiful valley, between chalk hills, clothed with beech-wood.

HAVE OCCURRED IN THE BRITISH ISLANDS IN 1849.

due time, and the young partially reared by their foster parents. The circumstances above detailed induced me to seek for others in the same districts, and I met with a second pair the next day at Elliot's Mill, about two miles and a half higher up the stream. I farther ascertained, that this species was not uncommon as a summer resident, and that the yellow Wagtail, *Budytes flova*, so universally dispersed over the country, was seldom or ever seen there.

UPUPA EPOPS.

A SPECIMEN was killed near Budle Bay in April last, and had been observed for two or three days before its capture. It proved to be a female, and is now in the collection of W. Broderick, Esq., Belford.











