

REMARKS ON THE PRESENT STATE OF THE  
SYSTEMA AVIUM.

BY P. L. SCLATER.\*

It will be generally allowed, I believe, by all ornithologists that the Systema Avium is not at present in a very satisfactory state. The Cuvierian arrangement and its modifications have been broken down by the criticisms of modern inquirers; but no other system has arisen to take its place, or, at all events, has secured general adoption. The subject being, as will be universally allowed, one of the utmost importance, I have thought it possible that my brother workers might like to hear what my views are upon the question.

Up to 1873, as regards general arrangements, I had acquiesced, more or less, in the modified Cuvierian system employed by G. R. Gray in his well-known works. I had, however, long before quite come to the conclusion that the true Passeres were the most highly developed order of birds, and should be placed at the head of the series, and that the Fissirostres and Scansores, which in Gray's system merely figure as subdivisions of the Passeres, should stand as separate orders. I had also made up my mind that, as regards the subdivisions of the Passeres, Müller's discoveries as to the form of the larynx and the arrangement of its muscles could not be passed over. Accordingly, in the catalogue of my collection of American birds, published in 1862, I arranged the three first orders of birds (as I then considered them), to which my collection was restricted, as follows:—

## Ordo PASSERES.

Sectio *Oscines.*

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|--------------------|------------------|
| i. Turdidæ.        | x. Vireonidæ.    |
| ii. Cinclidæ.      | xi. Laniidæ.     |
| iii. Sylviidæ.     | xii. Ampelidæ.   |
| iv. Paridæ.        | xiii. Cœrebidæ.  |
| v. Certhiidæ.      | xiv. Tanagridæ.  |
| vi. Troglodytidæ.  | xv. Fringillidæ. |
| vii. Motacillidæ.  | xvi. Alaudidæ.   |
| viii. Mniotiltidæ. | xvii. Icteridæ.  |
| ix. Hirundinidæ.   | xviii. Corvidæ.  |

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As comparatively few American readers of the Bulletin have ready access to the "Ibis" it has been deemed expedient to lay before them, in view of its high importance, Dr. Sclater's memoir here reprinted.—Eds.



Sectio *Tracheophona*.

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|-----------------------|--------------------|
| xix. Dendrocolaptidæ. | xxii. Tyrannidæ.   |
| xx. Pterotochidæ.     | xxiii. Cotingidæ.  |
| xxi. Formicariidæ.    | xxiv. Phytotomidæ. |

## Ordo FISSIROSTRES.

- |                  |                    |
|------------------|--------------------|
| i. Momotidæ.     | vi. Trogonidæ.     |
| ii. Todidæ.      | vii. Caprimulgidæ. |
| iii. Alcedinidæ. | viii. Cypselidæ.   |
| iv. Galbulidæ.   | ix. Trochilidæ.    |
| v. Buccinidæ.    |                    |

## Ordo SCANSORES.

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|-------------------|----------------|
| i. Cuculidæ.      | iv. Picidæ.    |
| ii. Rhamphastidæ. | v. Psittacidæ. |
| iii. Capitonidæ.  |                |

This arrangement of the three first orders of birds I employed until 1872, allowing the Accipitres to succeed, and the remaining orders to follow, according to the Grayian system. But in 1872 it was necessary to decide what arrangement should be employed for the remaining orders in the list of Neotropical birds ('Nomenclator Avium Neotropicalium') which I was then preparing together with Mr. Salvin.\* In the mean time the famous investigations of Prof. Huxley on the bones of the palate in the class of birds had taken place, and an entirely new arrangement of the class, consequent upon these investigations, had been promulgated. Having long entertained serious doubts as to the validity of the Grayian system, especially as to the groups associated together in the orders Grallæ and Anseres, I was pleased to find an alternative which had the sanction of high authority. Prof. Huxley had commenced his "Systema"† with the lowest and most reptilian birds, and had ended it with the highest and most specialized. But it seemed to me that, by exactly reversing this arrangement, I should obtain a scheme which would not very far deviate from that which I had already employed as to the first three orders, and would offer many improvements on the Grayian system in the remainder. In the introduction to the 'Nomenclator,' accordingly, I gave the subjoined scheme as that which I proposed to employ for the general arrangement of living birds, dividing them into 21 orders, as follows:—

\* [The arrangement adopted in the 'Nomenclator' is entirely Mr. Sclater's. I was forced to desert my colleague when I visited Central America in 1873-4, a portion only of this work having been then printed and the Introduction unwritten.—O. S.]

† P. Z. S. 1867, p. 456



under the title of Prionopidæ. I fail to see that it has any connexion at all with the other genera placed in that group.

5. *Falculia*, also a laminiplantar Oscine, has been hitherto usually associated with the Hoopoes, to which it has no sort of relationship (*cf.* Murie, *Ibis*, 1873, p. 201). It is certainly either a Sturnine or a Corvine form; M. Milne-Edwards will probably soon tell us which.

The limits of the Passeres being now ascertained with tolerable certainty, the still more difficult question of the sub-division of the Order presents itself. On this subject Garrod's first memoir on the anatomy of the Passerine birds\* gives us a summary of the latest information, not only as regards the lamented author's own elaborate investigations, but also as concerns the labours of previous authors. Garrod's proposed system for the arrangement of the Passeres is as follows:—

Passeres.	{ Acromyodi (Oscines).	{ Normales.		
			{ Abnormales. { <i>Menura</i> .	
	{ Mesomyodi.	{ Heteromeri.	{ Pipridæ.	{ <i>Atrichia</i> .
				{ Cotingidæ.
{ Tracheophonæ.				
			{ Homœomeri. { Haplophonæ.	

In this scheme it will be observed that the Oligomyodæ, as in accordance with Prof. Huxley's suggestion (*P. Z. S.* 1867, p. 471), the great American group of Passeres with only three pairs of singing-muscles was denominated in our 'Nomenclator,' are divided into two sections, and the Tracheophonæ are interposed between them. In consequence of the development of a femoral in the place of a sciatic artery, the Pipridæ and Cotingidæ (with the exception of *Rupicola*) are placed by themselves in a second primary division (*Heteromeri*) of non-Oscine Passeres. But it seems to me that this arterial character, although no doubt of importance, is not as yet sufficiently understood and investigated to allow it to rank before the well-ascertained structure of the lower larynx. Again it is quite obvious that the Acromyodi abnormales (*i. e.* *Menura* and *Atrichia*), although they approach the true Oscines in their syringeal structure, are divergent from the rest of the Passeres by much more important osteological characters. For the present, therefore, I am disposed to uphold the system of the division of the Passeres em-

\* *P. Z. S.* 1876, p. 506.



ployed in the 'Nomenclator' as still the most convenient to be adopted, and to place the Acromyodi abnormales of Garrod (which, being extra-American, were not included in the 'Nomenclator') at the end of the Passerine series under the name Pseudoscines. The arrangement would then come out as follows:—

- i. Oscines.
- ii. Oligomyodæ.
- iii. Tracheophonæ.
- iv. Pseudoscines }
  - a. Atrichiidæ.
  - b. Menuridæ.

We thus get the advantage of having what are certainly the most anomalous forms of Passerine birds yet known at the end of the series.

We must now approach the still more vexed question of the division of the Oscines into families. The difficulty here obviously arises from the fact that the Oscines are all very closely related to one another, and, in reality, form little more than one group, equivalent to other so-called families of birds. As, however, there are some 4700 species of Oscines known, it is absolutely necessary to subdivide them; and the task of doing this in the most convenient and natural way is not an easy one.

Sundevall, who has certainly devoted more time and attention to the external characters of the Passeres than any other naturalist of this century, in his last work ('*Methodi Naturalis Avium disponendarum Tentamen*,' Stockholm, 1872) divided his "Oscines laminiplantares" (which are equivalent to the Passeres here considered, with the exception of the Larks) into six "Cohortes," as follows:—

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|---------------------------------|----------------------------------|
| i. Cichlomorphæ . . . . 50 fam. | iv. Certhiomorphæ . . . . 3 fam. |
| ii. Coniostres . . . . . 15 "   | v. Cinyrimorphæ . . . . 5 "      |
| iii. Coliomorphæ . . . . 15 "   | vi. Chelidomorphæ . . . . 1 "    |

Sundevall's characters are derived partly from the structure of the bill and partly from other points, and his six primary divisions seem to me to be very naturally conceived. On the other hand, Mr. Wallace's well-known arrangement of the Passeres, first proposed in this Journal,\* and subsequently followed in his great work on distribution, is based entirely upon the

\* Ibis, 1874, p. 406.



structure of the wing. Mr. Wallace's Formicaroid and Anomalous Passeres correspond nearly with what I call the Oligomyodæ, Tracheophonæ, and Pseudoscines, whilst the Oscines are distributed in his arrangement under three heads, as follows:—

## Series A. TYPICAL OR TURDOID PASSERES.

Wing with 10 primaries, the first always more or less markedly reduced in size.

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|--------------------|---------------------|
| 1. Turdidæ.        | 12. Campephagidæ.   |
| 2. Sylviidæ.       | 13. Dicuridæ.       |
| 3. Timaliidæ.      | 14. Muscicapidæ.    |
| 4. Cinclidæ.       | 15. Vireonidæ.      |
| 5. Troglodytidæ.   | 16. Pachycephalidæ. |
| 6. Certhiidæ.      | 17. Laniidæ.        |
| 7. Paridæ.         | 18. Corvidæ.        |
| 8. Leiotrichidæ.   | 19. Paradiseidæ.    |
| 9. Phyllornithidæ. | 20. Meliphagidæ.    |
| 10. Pycnonotidæ.   | 21. Nectariniidæ.   |
| 11. Oriolidæ.      |                     |

## Series B. TANAGROID PASSERES.

Wing with 9 primaries, the first of which is fully developed and usually very long.

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|-----------------|-----------------|
| 1. Motacillidæ. | 6. Ampelidæ.    |
| 2. Mniotiltidæ. | 7. Hirundinidæ. |
| 3. Cœrebidæ.    | 8. Tanagridæ.   |
| 4. Drepanidæ.   | 9. Fringillidæ. |
| 5. Dicæidæ.     | 10. Icteridæ.   |

## Series C. STURNOID PASSERES.

Wing with 10 primaries, the first of which is rudimentary.

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|--------------|--------------|
| 1. Ploceidæ. | 3. Artamidæ  |
| 2. Sturnidæ. | 4. Alaudidæ. |

The objection to this arrangement is that it separates some very nearly allied forms far too widely. The "spurious primary" which Mr. Wallace relies upon to divide his Tanagroids and Sturnoids is not always even a *generic* character. In *Vireo*, for example, it varies in the different species, being present in some and absent in others. Mr. Wallace puts the Alaudidæ amongst his Sturnoids; but in some larks (*Calandrella* &c.) the spurious primary is altogether wanting. The Ploceidæ and Fringillidæ, which are barely distinguishable as families, fall under different heads, as do the Sturnidæ and Icteridæ. Yet there cannot be a doubt as to the intimate connexion of the two last-named families.



In my opinion Sundevall's groups of the Oscines are therefore far more naturally conceived; and in our 'Nomenclator' I have nearly followed them, using only the more familiar expressions ending in 'rostres,' throughout the divisions. Thus:—

Sundevall's Cichlomorphæ	= Oscines dentiostres of the 'Nomenclator.'
" Conirostres	= Oscines conirostres
" Coliomorphæ *	= Oscines cultriostres
" Cinyrimorphæ	= Oscines tenuirostres
" Chelidomorphæ	= Oscines latirostres

No species of Sundevall's "Certhiomorphæ" being found in the New World, I have not given that group any equivalent designation. But calling these "Oscines curviostres," for uniformity's sake, and keeping the Larks apart on account of their peculiar *planta* I should propose to arrange the Oscines as follows:—

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|---------------------|------------------|
| A. Laminipiantares. | 1. Dentiostres.  |
|                     | 2. Latiostres.   |
|                     | 3. Curviostres.  |
|                     | 4. Tenuirostres. |
|                     | 5. Conirostres.  |
|                     | 6. Cultriostres. |
| B. Scutiplantares.  | (Alaudidæ).      |

These six groups may, I think, be separated without much difficulty. But when we come to attempt to subdivide them, there is room for endless varieties of opinion as to the nearest allies of many of the forms. It would, I fear, be impossible to discuss the best arrangement of the different subdivisions of these groups within the limits of this paper.

The second suborder of Passeres, the Oligomyodæ, are not nearly so numerous as the Oscines. It embraces, however, according to the present state of our knowledge, some 550 species, belonging to 8 families, most of which are restricted to the New World.

\* Mr. Sharpe's "Coliomorphæ" (Cat. Birds, iii. pp. 3. 4) is quite a different group from that designated by Sundevall ('Tentamen,' p. 37) by the same name. Sundevall's Coliomorphæ is nearly equivalent to my "Oscines cultriostres" (Sundevall's group includes *Irrisor*, on which point see above, p. 343), and consists of the following families (according to my nomenclature):—Icteridæ, Sturnidæ, Buphagidæ, Paradiseidæ, and Corvidæ. But Mr. Sharpe puts in his "Coliomorphæ" only the last two of these five families, and adds to them the Oriolidæ, Dicruridæ, and Prionopidæ. The first two of these belong to Sundevall's Cichlomorphæ (*i. e.* my Dentiostres); the last consists of a heterogeneous assemblage of genera, mostly also Dentiostres, but having, in my opinion, no sort of connexion together.



*New World.*  
 Oxyrhamphidæ.  
 Tyrannidæ.  
 Pipridæ.  
 Cotingidæ.  
 Phytotomidæ.

*Old World.*  
 Pittidæ.  
 Philipitidæ.  
 ————  
 Eurylæmidæ.

Of these the Eurylæmidæ must be deemed, without doubt, the most aberrant, on account of the non-freedom of the flexor hallucis, above alluded to, which is unique in the order of Passeres.

The third suborder of Passeres, the Tracheophonæ, distinguished by the peculiar structure of the syrinx, first described by Johann Müller, is entirely confined to the New World. According to my views, the 500 species which it comprehends should be divided into three families, the last of which is peculiar among all the Passeres in having a double notch at the posterior margin of the sternum. They are:—

Sterni postici fissura unica	}	1. <i>Dendrocolaptidæ.</i>
		2. <i>Formicariidæ.</i>
Sterni postici fissuris duabus	3.	<i>Pteroptochidæ.</i>

The fourth and last section of the Passeres, which I have proposed to call Pseudoscines, contains only the anomalous Australian forms *Atrichia* and *Menura*, which are each fully worthy of family rank. When some of the other obscure Australian forms (such as *Orthonyx*) have been further examined, it is very possible that additions will have to be made to this series.

## 2. CYPSELI sive MACROCHIRES.

It is now universally admitted that the *Cypseli*, although not Passerine, come near to that great Order in many particulars. Nitzsch in 1829,\* first constituted the group, to contain the Cypselidæ and Trochilidæ, and called them "Macrochires," from the peculiar elongation of the bones of the manus. Sundevall, in 1836, adopted the term, and used the same limits. In his 'Pterylographie,' Nitzsch reduced the rank of the Macrochires to a family of his Picariæ—a group to which, however, he expressly states that he can assign no single peculiar pterylographic character. If we allow due value to palatal structure, we must keep the Macrochires and Pici apart from the rest of the Picariæ of

\* 'Obs. de Avium arteria carotide communi.' Halæ, 1829.



Nitzsch, as Prof. Huxley has shown,\* although he appears not to have fully realized the structure of the palate in the Trochilidæ.† In the 'Nomenclator' four families are assigned to the Order Macrochires—the Trochilidæ, Cypselidæ, Caprimulgidæ, and Steatornithidæ. Of these it is now quite certain, from Garrod's researches, that the last named must be removed to another situation, the palate being strongly desmognathous.‡ The best place, therefore, for *Steatornis*, according to my present opinion, is either as a family next to the Podargidæ, or, as the form presents so many strong peculiarities, as an independent order next to the Striges.

The Macrochires will therefore consist only of three families—the Trochilidæ, Cypselidæ, and Caprimulgidæ. No one, I believe, will now deny the close alliance of the first two of these families. As regards the Caprimulgidæ, they differ from the typical Macrochires not only in the lesser comparative development of the manus, but also in possessing cæca, and their position will require further consideration.

3. The Pici were first constituted a separate order by Sundevall in 1835,§ to consist of two families, the Picidæ and Iyngidæ. They are the exact equivalent of Prof. Huxley's Celeomorpha. Garrod (P. Z. S. 1874, p. 123 *et alibi*) would associate with them the Rhamphastidæ and Capitonidæ, as "not in any point presenting family differences;" but if we follow Prof. Huxley in assigning a high value to the structure of the palate, it is quite evident that they should stand alone (*cf.* Huxley, P. Z. S. 1867, p. 468). There is no difficulty in distinguishing the Pici from all other birds—the structure of the tongue and of the feet is quite peculiar; and I think they must remain as an independent order or suborder.

[To be continued.]

\* P. Z. S. 1867, p. 468.

† *Cf.* Parker, Trans. Linn. Soc. ser. 2, Zool. i. p. 116.

‡ *Cf.* Garrod, P. Z. S. 1873, p. 530.

§ K. Vet. Ak. Handl. 1835, p. 68.