

NOMENCLATURE AND SYSTEMATIC POSITION OF THE PARADISE WHYDAHs.

BY JAMES P. CHAPIN.

WHILE my paper on the Paradise Whydahs¹ was still in press, Mr. H. Grote published his description of *Steganura paradisea interjecta*,² so that this name antedates my own *longicauda* for the race inhabiting the grasslands from the Lado Enclave west to the Cameroon. The following year the same author showed that there is an additional race, with still longer rectrices, in the savannas adjacent to the Upper Guinea forest; and this he named *togoensis*.³ In the shape of their lengthened rectrices these two forms show a resemblance to the race from Senegal and the western Sudan, to which Professor Neumann gave the name *aucupum*.⁴ So also do the races which I proposed to call *nilotica* and *obtusa*, from the eastern Sudan, and from the grass-countries between Angola and Nyasaland, respectively. On the other hand, from Eritrea south to Natal and west to southern Angola we find a form with long tapering tail-feathers, which I am convinced is the one named *paradisaea* by Linnaeus. At present six kinds of Paradise Whydah are generally recognized, instead of two as in 1921.

I. NOMENCLATURE.

Recently the study of the genus *Steganura* has been taken up again by Mr. R. Neunzig,⁵ who introduces the subject by stating that his results differ markedly from mine. No new races are separated, however, and the only difference of importance in his first paper is one of names. That he considers them all as races of a single species is in full accord with the usage of ornithologists in Germany at present, or in other words, with the Formenkreis theory. Like many other American students, I prefer to recognize

¹ Chapin, 1922, American Museum Novitates, No. 43, pp. 1-12.

² 1922, Journ. f. Orn., LXX, p. 402 (Between Nola and Mbalki, W. of Ubangi River).

³ H. Grote, 1923, Orn. Monatsberichte, XXXI, p. 43 (Kete, Togo).

⁴ 1908, Bull. Brit. Orn. Club, XXI, p. 43 (Diourbel, Senegal).

⁵ 1928, Zool. Anzeiger, LXXXVIII, pp. 177-190; 1929 Journ. f. Orn., LXXVII, pp. 1-21.

any well-marked gap in superficial characters by employing different specific names; and thus I have regarded *paradisaea* and *aucupum* as distinct species. We do not mean thus to deny them close blood-relationship or common ancestry, as might a true follower of Pastor Kleinschmidt, if he were to employ the same nomenclature. That the two groups of *Steganura* do overlap in some regions where their ranges meet cannot be denied, and males of the two groups *in nuptial dress* have been taken at the same locality and date. To explain the reasons will require more careful field observations. Breeding experiments would be difficult, because *Steganura* and its nearest allies are believed to be parasitic in their egg-laying, and we cannot yet distinguish the females of the various forms. Pending more thorough investigation, one point of view is about as logical as the other.

Intergradation between males of the two groups in the form of their longest pair of rectrices is unknown. If they do interbreed, there is complete dominance, or, as Neunzig calls it, alternative inheritance. With no knowledge of the genetics of the case, however, we may as well use nomenclature to point out the visible characters of the birds. Neither can migration be appealed to. So far as my own observations go, if the Paradise Whydahs do migrate, they cannot travel far, for the ranges of the various races of *aucupum* are too well defined; and males of *paradisaea* have been taken in breeding dress from Northeast to South Africa.

To take up the question of subspecific names: Neunzig has examined Heuglin's types of *orientalis*¹ in the Stuttgart Museum, and finds that they are not birds with tapering rectrices, but belong instead to the form which I named *nilotica*. This must be accepted, although from Heuglin's own diagnosis and the fact that in his synonymy of *orientalis* he included the names *australis* Heuglin, *verreauxi* Cassin, and *sphaenura* Bonaparte, there could be no way of determining it without reexamining the types. The form of the lengthened rectrices evidently meant nothing to Heuglin.

The most important taxonomic question discussed by Neunzig is the application of Linnaeus' name *paradisaea*. Here we still disagree radically. Neunzig attempts to shift this old name to the race with the shortest and broadest rectrices, which I have named

¹ Heuglin, 1871, 'Orn. Nordost-Afrikas,' I, p. 583 (Northeast Africa).

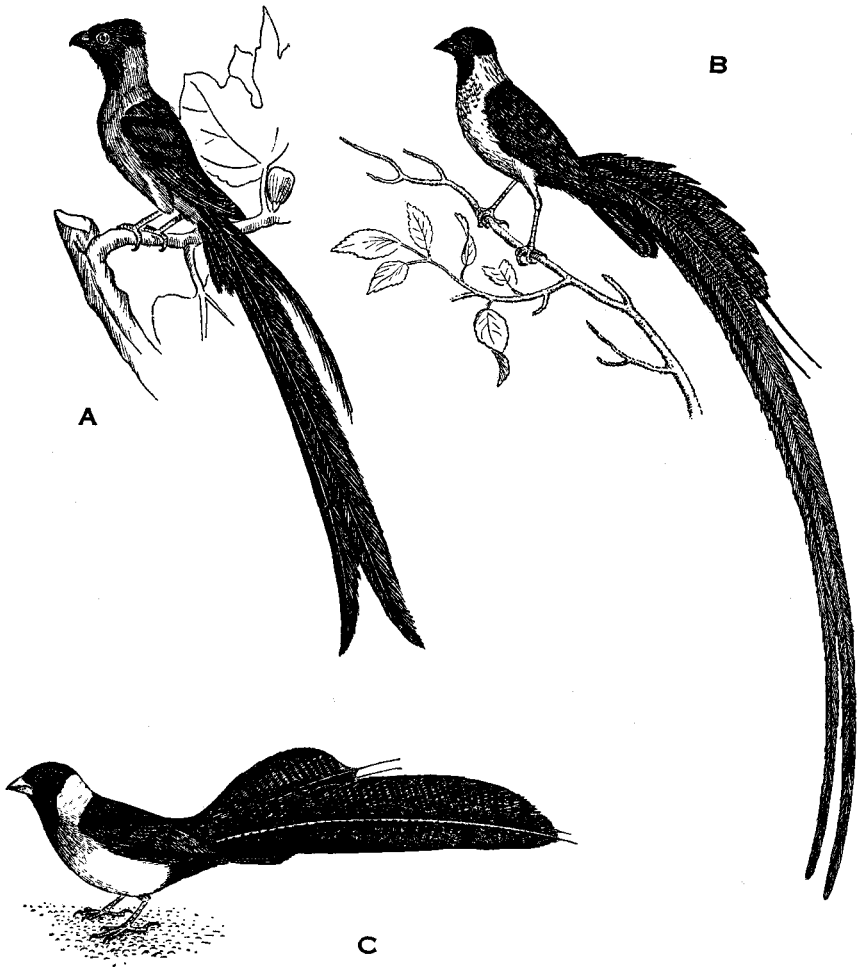


FIGURE 1. THREE OF THE FORMS OF PARADISE WHYDAH.

A. Copy of Aldrovandus' figure of *Passer Indicus Macrourus alius*, probably equivalent to *Steganura a. aucupum* Neumann. B. Copy of Edwards' figure of The Red-breasted Long-tailed Finch, or *Steganura paradisaea* (Linnaeus), from Angola. C. Male of *Steganura aucupum obtusa* Chapin, with rectrices fully grown, from the highland of north-western Benguella—one-fourth natural size. A and B are reduced in size so that the wing-length is approximately equal to that of C.

Steganura aucupum obtusa. Neither Linnaeus nor any of his predecessors ever described a bird of this form, and it is almost equally certain that they never saw one.

Before writing my paper of 1922 I had consulted all the references given in the 10th and 12th editions of Linnaeus' 'Systema Naturae.' As I stated, Aldrovandus' figure represents one of the forms with band-shaped rectrices, rather long, which probably came from Upper Guinea, inasmuch as the description includes: "Colum & pectus coloris sunt coccinei." But no locality was given. This figure cannot possibly be construed as the short-tailed Angola race, a comparison with a specimen or a figure of *obtusa* is convincing (Fig. 1). Neither of course can it be confused with the southern and eastern form with tapering rectrices.

Willughby copied his description from Aldrovandus, but the figure cited by Linnaeus from Willughby's work is a reversed copy of Aldrovandus' cut of the bird we now call *Vidua macroura* (Pallas). Petiver also copied the picture of *Vidua macroura* from Aldrovandus. Edwards, on the other hand, described and figured a male which he kept alive in captivity, of the form with long tapering rectrices, which Neunzig would now have us call *sphaenura* of Bonaparte. The fact that the nape is shown much too rufous is of little moment. Edwards stated that the bird came from Angola, and this is the only locality mentioned in the four references cited by Linnaeus in his 10th edition.

Emberiza paradisaea Linnaeus, 1758,¹ is thus a composite species, based on plates and descriptions of a bird similar to that of Senegal and another such as is found from southern Angola to Natal and Eritrea. The figures of *Vidua macroura* may be disregarded, as Linnaeus' description reads "*Nigra est sed cervice & pectore coccineo.*" But the description does not bar Edwards' plate, for this also shows considerable reddish on the hind-neck, albeit erroneously. If we could select the first reference cited, we might be inclined to fix the type-locality as Senegal; but if we take the only locality mentioned in the references, it will be Angola. Linnaeus simply said "*Habitat in Africa.*" The bird described by Edwards from Angola is clearly that with long, tapering rectrices; not the one with short, exceedingly broad rectrices which also occurs in Angola.

¹ 'Systema Naturae,' 10th Ed., p. 178.

Neither could Aldrovandus' bird have come from Angola, because of the shape of its rectrices.

As a matter of fact, Linnaeus in his 12th edition (1766), p. 312, did designate the type-locality as "*Habitat in Africae regno Angolensi.*" These words were quoted verbatim from Brisson,¹ whose description and figure he now added to his references. Brisson's specimen was in the cabinet of M. de Reaumur, and belonged clearly to the same race as Edwards' bird. Who can doubt that Linnaeus was naming the bird with long tapering tail-feathers, which he was reliably informed came from Angola? If any further argument be needed, it is there in Linnaeus' own words in the 12th edition: "Rectrices 4 *intermediae corpore longiores falcatae*; 6, 6 *corpore longiores in filum desinentes*; 5, 5 *quater longiores quam intimae* 6, & *subensiformes, ex harum sinu baseos seta longa dependet.*" In Neunzig's paper (1928, p. 179) this part of the description is quoted, but with three typographical errors. Inasmuch as Linnaeus expressly stated that the longest pair of rectrices is *four times* as long as the innermost pair, the description cannot possibly be made to apply to *obtusa*, where they are but 2 to 2½ times longer. In the plates of Edwards and Brisson this proportion is about 3½ to 1, if we except the hair-like tips.

Before 1766 there was no published figure or description of a Short-tailed Paradise Whydah from Angola. It is useless to argue, as Neunzig does, that Aldrovandus' figure may represent a specimen from Angola. The copy here offered will make this clear. Aldrovandus described a bird of Upper Guinea, his mention of a reddish neck excluding even that of the northeastern Sudan. And Linnaeus himself expanded his descriptions so that it applies only to the bird with long tapering tail-feathers. Jules Verreaux was perhaps the next ornithologist to see the real significance of the shape of these rectrices, but Cassin and Bonaparte were not justified in taking his advice and renaming the bird with tapering tail. It had already been named by Linnaeus, and the birds from southern Angola and Abyssinia are identical.

Neunzig argues further that birds such as Edwards and Brisson figured are not found in Angola proper. Yet the British Museum has a male in breeding plumage labeled as collected at Loanda by

¹ 1760, 'Ornithologie,' pp. 120-124, Pl. VIII, fig. 1.

Toulson. This is very probably the one reported as *Vidua paradisica* by Bocage,¹ and I see no reason to question the data. Many species of birds of the dry region near Mossamedes extend much farther north along the arid coast of Angola than they do in the better-watered interior. Bocage himself described the males among Angola specimens as having the lateral pair of lengthened rectrices much longer than the median pair, and narrowing more and more towards their extremity, giving their length as 335 mm. The maximum tail-length in *obtusa* is only 216 mm.

While accepting Angola as the type locality of *paradisica*, Neunzig insists upon the Kingdom of Angola as then recognized. But in the second half of the eighteenth century, when Brisson wrote, the name Angola was already being applied to a much larger area. Thus, in the 'Encyclopaedia; or, a Dictionary of Arts, Sciences, and Miscellaneous Litterature', Volume II, published in Philadelphia by Thomas Dobson, 1798, we are informed on p. 7:

"ANGOLA, a kingdom on the western coast of Africa, lying according to the most probably accounts, between Lat. 8.30 and 16.21 South, forming a coast of upwards of 480 miles. Angola Proper is bounded on the north by the River Danda, which separates it from Congo; and on the south by the Coanza, by which it is separated from Benguela. This last, however, is now included in the kingdom of Angola, having been conquered by its monarchs, tho' it still retains the name of kingdom, and is included in the dimensions we have just now given."

We know today, of course, that the interior of Angola is inhabited by the shorter-tailed *obtusa*, with exceptionally broad rectrices. But we also have every reason to believe that no specimen of *obtusa* was known in Linnaeus' time. Certainly none had been figured. I have examined the material in eight of the museums of Europe and the United States, and Neunzig has done the same in seven other museums of Europe, with the result that the earliest specimens of *obtusa* extant appear to be those of Mechow, Schütt, and Böhm. None of these was collected before 1878!

Such questions of nomenclature are merely the book-keeping of ornithology. But it would be most regrettable if we allowed the entries to be altered without reason. I have gone into this matter

¹ 1881, 'Ornithologie d'Angola,' p. 346.

at considerable length, in the hope that further confusion in the names of the Paradise Whydahs may be avoided. It is evident that Cassin and Bonaparte were wrong in regarding the Senegal form as Linnaeus' *paradisaea*. Professor Neumann discovered their mistake, and named the Senegal bird *aucupum*. Having adopted this necessary change, we ought to beware of further errors such as that into which Neunzig would lead us. *Steganura paradisaea* (Linnaeus) is most certainly the bird figured by Edwards and Brisson, which is found in southern Angola, if not indeed along the coast northward to Loanda. Briefly, let us repeat the reasons:

- (1) Linnaeus himself restricted the type-locality of *paradisaea* to Angola.
- (2) Of the two forms of *Steganura* now known from Angola, only the one with long, tapering rectrices agrees with Linnaeus' description of 1766.
- (3) Linnaeus gave references to two good drawings of birds said to have come from Angola, both with tapering rectrices.
- (4) The other, broad-tailed form from Angola (*obtusa*) had neither been described nor figured when Linnaeus wrote, and seems not to have been collected before 1878.

II. THE SYSTEMATIC POSITION OF STEGANURA.

In the second paper, which deals with the parasitic reproduction of *Vidua* and its allies, Neunzig¹ touches briefly on the classification of the Ploceidae, and states his preference for the arrangement followed by Shelley (1905), in opposition to that which I proposed in 1917.² Like most of the earlier classifications, Shelley's was based on the relative size of the outermost primary and the presence or absence of elongated rectrices. The slight value of these characters I have already discussed, and my conclusions as to the relation between the *Vidua* group and the Estrildinae have since been examined critically by Professor Sushkin,³ after careful anatomical comparisons. This recent work must have been overlooked by Neunzig.

Since Professor Sushkin's findings differ slightly from my earlier conclusions, the latter having been based largely on external fea-

¹ 1929, Journ. f. Orn., LXXVII, pp. 1-21.

² Bull. Amer. Mus. Nat. Hist., XXXVII, pp. 243-280.

³ 1927, Bull. Amer. Mus. Nat. Hist., LVII, pp. 1-32.

tures, we may quote a few sentences from his paper (pp. 24, 25): "*Pyromelana* and (from the structure of its horny palate) *Coliuspasser* prove to belong to the Ploceinae, where these genera have been placed by Chapin, contrary to the opinion of other classifiers of the group . . . *Vidua* and *Steganura*, while showing unmistakable features of the Estrildinae, differ less strongly than usual from the Ploceinae . . . *Vidua* and *Steganura*, which show some unmistakable features of the Estrildinae, and none of the characters common to the Ploceinae that could not be interpreted as primitive, are in their skeletons the most primitive of Estrildinae . . . they are strongly modified in their nuptial plumage, but on a very low base."

While aiding Professor Sushkin in his studies, I found that he was inclined to subdivide the Estrildinae in several groups, such as a *Munia-Spermestes* group, a *Vidua* group, and possibly one for *Pyrenestes*. Of course he never considered *Pyromelana* or *Coliuspasser* as members of the "Vidulinae." Several divisions of this sort within the Estrildinae had already been indicated by horizontal lines in my classification of 1917 (p. 261). To call them subfamilies might seem to create an excessive number for the single family Ploceidae.

I have, to be sure, pointed out the differences in mouth-markings between the young of the *Munia-Spermestes* group and of the majority of other Waxbills,¹ but Neunzig's further studies² have revealed intermediate patterns, especially in *Steganopleura* and *Poëphila*.

I still have no doubt that in internal characters *Steganura*, *Tetraenura*, *Linura*, *Vidua*, and *Hypochera* are much closer to *Estrilda* than to *Coliuspasser*, *Pyromelana*, and allied genera. The *Vidua* group (in a restricted sense) may nevertheless come to be regarded as a valid subfamily not far removed from the Estrildinae. Some of its distinctive characters I have already shown, especially the peculiar condition of the skull-roof, which remains throughout life in a state like that of most immature Passeres. Professor Sushkin

¹ The name Spermestinae was abandoned in favor of Estrildinae because *Estrilda* Swainson 1827 antedated *Spermestes* Swainson 1837.

² Neunzig, 1929, Beiträge zur Fortpflanzungsbiologie der Vögel, V, pp. 7-17, Pls. I, II.

remarked upon the pneumatic perforations of the inner head of the quadrate.

In the wing-ptyerylosis Mr. W. De W. Miller has discovered an unexpected peculiarity of the *Vidua* group, and another of the typical Estrildinae, which I shall here report with his kind authorization:

(1) The vast majority of Oscines have no true lesser upper secondary-coverts, or only vestigial downy feathers representing them. In the latter condition they are completely hidden beneath the marginal coverts. Among Clamatores there is usually one row of well-formed lesser coverts.

Nevertheless, there are exceptional cases among the Oscines. *Corvus* and *Gymnostinops* do have 5 to 8 of the proximal lesser secondary-coverts large enough to be visible, but the distal ones are often lacking. *Ptilonorhynchus violaceus* has 8, of which 4 or 5 proximal feathers are normal and visible. While *Paradisaea apoda* has a single row of lesser coverts, not large enough to be visible beyond the marginals, *Paradisaea rubra* is altogether exceptional in having two visible rows of lesser coverts.

The *Vidua* group differs from the remainder of the Estrildinae, as it does also from all Ploceinae, in possessing one row of well-developed lesser secondary-coverts. Thus *Vidua macroura* has a normal row which is well-formed and visible; *Steganura paradisaea* and *Linura fischeri* have 5 good-sized lesser coverts, the distal 2 or 3 being absent; and *Hypochoera ultramarina* shows a similiar row of 6 feathers.

This might be regarded as a primitive character; but it is not found in *Bubalornis* and *Dinemellia*, where there are only concealed downy vestiges of the feathers. These last two genera were regarded by Professor Sushkin as the most primitive members of the whole family.

(2) In most Oscines the first (or innermost) lower greater primary-covert is present and of nearly the same size as the second member of the same series. In the Ploceidae it is variable. Thus it is normal in *Xanthophilus galbula*, but of distinctly reduced size in *Textor cucullatus*. Sometimes reduced in *Pyromelana*, it is nearly normal in *Coliuspasser*, but conspicuously enlarged in *Diatropura*. *Bubalornis* and *Dinemellia*, though evidently primitive, exhibit a decided reduction of this innermost lower primary-covert.

The complete absence of the feather is a surprising feature of most Estrildinae, as for example *Munia*, *Padda*, *Aidemosyne*, *Spermestes* (except probably *S. nana*), *Amadina*, *Taeniopygia*, *Ortygospiza*, *Stizoptera*, *Lagonosticta*, *Amandava amandava*, *Neisna subflava*, *Estrilda*, *Erythrura prasina*, and *Uraeginthus*. In *Poëphila gouldiae*, on the other hand, the covert in question is present but reduced in size, and the reduction has gone farther in *P. acuticauda*.

The *Vidua* group has retained the innermost greater primary-covert of the under wing-surface, which shows only slight reduction in *Vidua*, *Steganura*, and *Linura*, but more considerable decrease in *Hypochera*. The presence of the feather furnishes another distinction between the *Vidua* group and most Estrildinae (except *Poëphila*). It might be argued that it is a point of resemblance to many Ploceinae, but as such it is outweighed by many other points of difference.

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Neunzig concedes that his union of *Pyromelana* and *Coliuspasser* with *Vidua*, *Steganura*, and their allies in a subfamily Viduinae rests on but two characters: (a) the prenuptial molt with elongation of some or all of the rectrices in the male breeding plumage; and (b) the streaked, bunting-like pattern of the other plumages. Such purely superficial characters can bear but little weight in establishing subfamilies. *Amandava* among the Estrildinae likewise has a prenuptial molt and brighter breeding dress. Moreover, some species of *Sitagra* and *Othyphantex* have a prenuptial molt, while others of the same genus do not. *Hypochera* never has any long rectrices; and the lengthening of only four median rectrices in *Steganura*, *Vidua* and their close relatives is a very different matter from the prolongation of the whole tail in *Coliuspasser*, *Drepanoptectes*, and *Diatropura*. That the prenuptial molt of the tail is anything but a fundamental character must be clear from the failure of *Pyromelana hordacea* to shed its rectrices at the prenuptial molt, whereas they are renewed without noticeable lengthening in *Pyromelana xanthomelaena*. As for the streaked color-pattern in the duller plumages, subfamilies demand better characters than that.

The gape-wattles and palatal markings of the young of the *Vidua* group are much more typically Estrildine than those of *Spermestes*,

Munia, or *Padda*. And the eggs of the *Vidua* group are white like those of the Estrildinae. To attempt to ally the *Vidua* group with *Coliuspasser* rather than with *Estrilda*, and then to argue that the spotless white eggs and mouth-markings in the young have been acquired afresh through a process of parasitic mimicry of their fosterers, this is indeed putting the cart before the horse.

The very remarkable resemblances pointed out by Neunzig between the young of certain species of parasitic "Viduinæ" and of the Waxbills by which their young are believed to be reared may be cited in direct contradiction to his views on classification. Though I cannot confirm all the juvenile resemblances between the parasites and their supposed hosts, I have examined the mouths of young of *Steganura paradisaea*, *Vidua macroura*, *Vidua hypocherina*, and *Hypochera camerunensis*, and have found them similar in the main to the sketches given by Neunzig. Yet the differences between the various species and genera of parasitic "Viduinæ" are about what one finds between allied species and genera among the typical Estrildinae. Even if selective mimicry could be proved, would it not be wiser to admit that the process began with forms whose young already were provided with gape-wattles and palatal markings similar to those of the Estrildinae?

The conclusion seems inevitable: that while *Steganura*, *Tetraenu-ra*, *Linura*, *Vidua*, and *Hypochera* may perhaps be regarded as a distinct subfamily, they are closely allied to the Estrildinae, such as *Pytilia*, *Lagonosticta*, *Estrilda*, and *Granatina*. Nor can the *Vidua* group be placed in the same subfamily as *Pyromelana*, *Coliuspasser*, *Drepanoptes*, and *Diatropura*, all of which are clearly Ploceine.

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