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## REMARKS ON THE CLASSIFICATION OF THE PTEROCLIDIDÆ

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The family Pteroclididæ, an Old World group of birds commonly known as Sandgrouse, contains sixteen species, ten of which inhabit Africa. Three genera, *Syrrhaptes*, *Pterocles*, and *Eremialector*, are usually recognized, though the validity of the last named is sometimes questioned. *Syrrhaptes* contains but two species, and is readily distinguished from all other members of the family owing to the peculiar nature of its foot, which is feathered to the tips of the toes, lacks a hallux, and has the three front toes united to form a "pad" below. This, together with some osteological peculiarities which need not be considered here, fully justifies its generic distinction and, except in so far as affinities are indicated with other sandgrouse, attention in this study will be focused entirely on the remaining fourteen species of the family.

A field acquaintance with five species, *senegallus*, *senegalensis*, *coronatus*, *lichtensteinii*, and *quadricinctus*, gained during a residence of five years in the northern Sudan has convinced me that the elongation of the central pair of rectrices, the character used to distinguish the genera *Pterocles* and *Eremialector*, is not only insufficient but leads actually to an unnatural division; nevertheless, in their habits, especially in relation to drinking, these birds fall naturally into two groups and this is well known to anyone who is familiar with them in life.

Of the five Sudan species, three are typically diurnal and come to drink with clockwork-like regularity each morning between the hours of seven and nine, after which they return far out into the desert to lie up during the heat of the day. In the afternoon, especially during the hot season, some, if not all, drink again about two hours before sunset, but never much later. The two remaining species, *lichtensteinii* and *quadricinctus*, are in contrast crepuscular in habits, never arriving at their customary watering places before the sun has set, and often continuing to come until well on into the night, and possibly also in the morning before sunrise.

The strikingly characteristic plumage of the latter two, coupled with this distinction in habits, led me to wonder whether any such distinctions obtained in other members of the family and, if so, whether further differences of sufficient importance to justify generic recognition could be found. A search through a large portion of the literature on the family has shown that the four species, *lichtensteinii*, *quadricinctus*, *bicinctus*, and *fasciatus*, form a group characterized by their crepuscular habits and all agree in having a rather characteristic color pattern. A few extracts taken from various sources will serve to illustrate how noticeable are these habit distinctions.

*P. alchata* (Linnæus).

"The morning flight of Sand-Grouse for the purpose of drinking commences soon after sunrise, and is generally continued for an hour or two, or until the sun is well up when it entirely ceases." (Whitaker, quoted by Stuart Baker, 1914, Journ. Bombay N. H. Soc., XXIII, pp. 7-8.)

*P. namaqua* (Gmelin).

"In the morning just about sunrise and in the evening just before sunset it resorts to pools and rivers, circling round in large flocks at a great height above the ground and then suddenly descending to drink." (Selater, 1906, 'The Birds of South Africa,' IV, p. 193.)

*P. senegalensis* Lichtenstein.

"It feeds chiefly in the morning and between 8 and 9 a.m. goes to drink at some river or tank. . . ." (Jerdon, quoted by Stuart Baker, 1914, Journ. Bombay N. H. Soc., XXIII, p. 15.)

*P. senegallus* (Linnæus).

"The Spotted Sand-Grouse is a bird of the same distribution and habits as the last species, (*P. exustus*=*senegalensis*) in company with which it visits the river daily to drink." (Butler, 1905, Ibis, 1905, p. 389.)

*E. arenarius* (Pallas).

"They are very regular and punctual in visiting their drinking places, more especially in the morning, for this species of Grouse does not seem to always drink in the evenings. As a rule, the first few birds appear at the river or tank, as the case may be, within an hour and a half after sunrise and flocks continue to arrive for about two hours, or rather less. . . ." (Stuart Baker, 1913, Journ. Bombay N. H. Soc., XXII, p. 8.)

*E. coronatus* (Lichtenstein).

Little has been written on this species and I can find nothing to confirm my own observations save the bare mention by King (Sudan Notes and Records, IV, p. 42) that it is one of the three species in the Sudan which "come to the sandbanks to drink in the early morning."

*E. gutturalis* (Smith).

"The Yellow-throated species (*P. gutturalis*), though sometimes seen at water about the middle of the afternoon, drank mainly between 8 and 10 a.m." (H. A. Bryden, quoted by Horsburgh, 1912, 'Game-Birds and Water-Fowl of South Africa,' p. 94.)

*E. burchelli* W. Sclater.

"It drinks morning and evening, and nearly always at such regular times that one can almost set a watch by it. . . . at one water-hole that I know of in the Kalahari, at 7.45 a.m. precisely the air was filled with these Sandgrouse. . . ." (Horsburgh, 1912, 'Game-Birds and Water-Fowl of South Africa,' p. 97.)

*E. personatus* (Gould).

I know of no recorded account of the drinking habits of this species. Elliot (Proc. Zool. Soc., 1878, p. 240) says that "in its economy and habits it does not differ from the other members of the genus," but unfortunately both evening and morning drinkers are included in "the genus."

*E. decoratus* (Cabanis).

"A few of these birds were seen coming to drink at about 10 a.m." (Willoughby P. Lowe, 1915, Ibis, 1915, p. 32.)

*E. lichtensteinii* (Temminck).

"I saw little of them in the daytime, beyond flushing a few occasionally among the rocks, but every night small parties of them came flying down to the *chor* to drink, until considerable numbers were collected along the stream. They did not arrive at the water until dusk was merging into darkness, but continued to come until after 8 p. m." (Butler, 1909, Ibis, 1909, p. 404.)

*E. bicinctus* (Temminck).

"In habits they might almost be termed crepuscular. Every evening, as regular as clockwork and just as dusk is closing in, they wing their way to their watering-spots, while, should the night be moonlit, they feed in the vicinity of water." (Boyd Alexander, quoted by Horsburgh, 1912, 'Game-Birds and Water-Fowl of South Africa,' p. 100.)

*E. fasciatus* (Scopoli).

"It differs. . . . from the common species, and from the Imperial Sand-Grouse in its drinking habits. These two, as is well known, drink in the morning after the sun has become hot and sometimes also, at least in the case of *P. exustus*, a couple of hours or so before sunset. *P. fasciatus*, on the contrary, always drinks at dusk, never in my experience before the sun is well below the horizon.

"Although I have never personally seen this grouse drink except at dusk, it is not impossible that, in the hot weather, it may also sometimes drink at dawn before the sun is up. I have more than once seen it on the wing at this time of the day." (Capt. A. H. Mosse, quoted by Stuart Baker, 1913, Journ. Bombay N. H. Soc., XXII, pp. 223-224.)

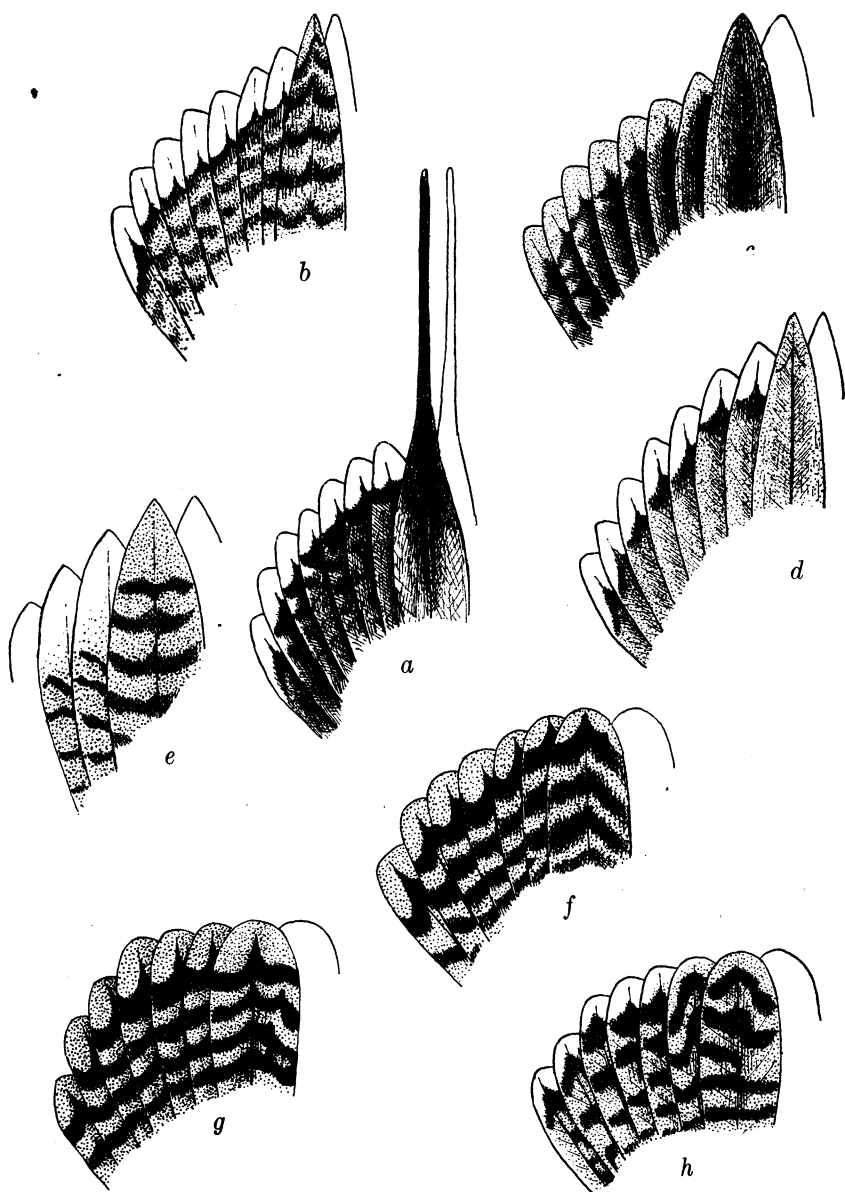


Fig. 1. Right half of tail of: a, *Pterocles senegalensis*; b, *P. arenarius*; c, *P. gutturalis*; d, *P. coronatus*; e, *P. personatus* (portion only); f, *P. bicinctus*; g, *P. lichtensteinii*; h, *P. decoratus* (female specimen).

*E. quadricinctus* (Temminck).

"The birds flighted down to drink at the open pools in small troops of six to twelve, chiefly in the evening, starting regularly about twenty minutes, and finishing about fifty minutes after sunset. On each trip they only stayed a few minutes at the water, then returned as they had come." (Lynes, 1925, *Ibis*, 1925, p. 581.)

Notwithstanding the slight variation in the exact time of the drinking period of individual species, it is abundantly clear that there is a marked difference in such habits between the four species, *lichtensteinii*, *bicinctus*, *fasciatus* and *quadricinctus*, and the remaining members of the family. Moreover, in habits other than those relating to the drinking period, these four birds are remarkably dissimilar to the other species of the family; but since the recorded accounts of the habits of several are somewhat scanty, the demonstration of this is more difficult and attention, in the present study, has been confined to the drinking habit only. To anyone familiar with these birds in life these other distinctions are very apparent. The habits of *E. personatus* are unknown to me, but since, as is pointed out later, it agrees with the diurnal-drinking species in certain characters which appear to show a correlation, I am led to believe that, when recorded, the habits of this bird will prove to be of the diurnal type. Being the only insular form and confined to Madagascar, where the fauna is in many ways strikingly dissimilar to that of the mainland, it is possible, however, that this supposition may prove to be erroneous.

Since my return from the Sudan I have been afforded the privilege of making a thorough examination of all the specimens of Sandgrouse in the collections of The American Museum of Natural History, the U. S. National Museum, and the Cleveland Museum of Natural History. For this opportunity I am indebted to Dr. Frank M. Chapman, Dr. C. W. Richmond and Mr. Geo. Finlay Simmons and I take this opportunity of expressing my appreciation of the facilities afforded. To Dr. Robert Cushman Murphy, Dr. Jonathan Dwight and Mr. W. DeW. Miller I am greatly indebted for help and advice freely given.

Several characters, apparently previously overlooked, are found to substantiate fully such opinions as a knowledge of the birds in life had led me to form.

## MATERIAL EXAMINED

*Syrrhaptes paradoxus*—8 males and 4 females in the Amer. Mus. N. H. and 2 males and 3 females in the U. S. Nat. Mus.

*Syrrhaptes tibetanus*—1 male in the U. S. Nat. Mus.

*Pterocles alchata*—1 male in the Amer. Mus. N. H. and 3 females in the U. S. Nat. Mus.

*Pterocles namaqua*—1 male and 1 female in the Amer. Mus. N. H. and 2 males and 1 female in the U. S. Nat. Mus.

*Pterocles senegalensis*—8 males and 7 females in the Amer. Mus. N. H., 27 males and 18 females in the U. S. Nat. Mus., and 4 males and 3 females in the Sudan Govt. Museum, Khartoum.

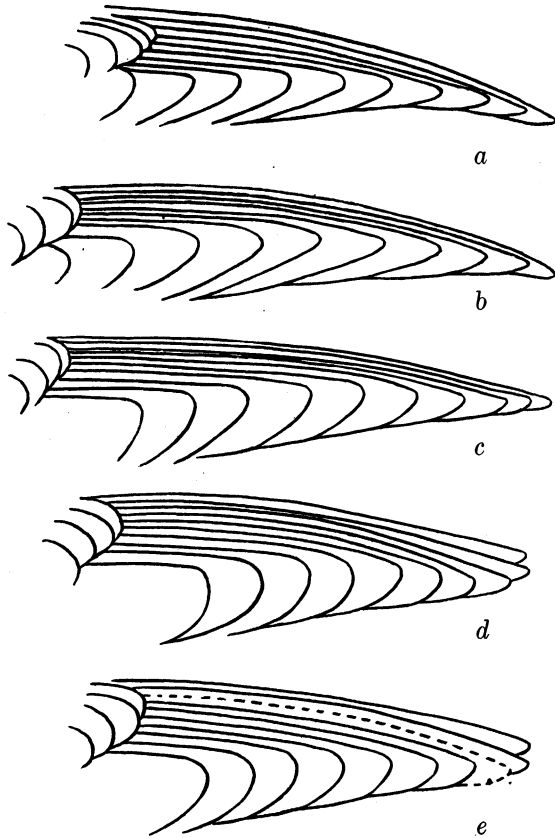


Fig. 2. Right wing of: a, *senegallus*; b, *arenarius*; c, *personatus*; d, *fasciatus*; e, *lichtensteinii*.

*Pterocles senegallus*—1 male and 2 females in the Amer. Mus. N. H., 1 male in the U. S. Nat. Mus., and 2 males and 1 female in the Sudan Govt. Museum, Khartoum.

*Eremialector arenarius*—1 male and 2 females in the Amer. Mus. N. H., and 3 males and 4 females in the U. S. Nat. Mus.

*Eremialector coronatus*—1 male and 1 female in the Amer. Mus. N. H. and 2 males and 2 females in the Sudan Govt. Museum, Khartoum.

*Eremialector gutturalis*—2 males in the Amer. Mus. N. H., and 9 males and 8 females in the U. S. Nat. Mus.

*Eremialector burchelli*—1 male and 1 female in the Amer. Mus. N. H.

*Eremialector personatus*—2 males in the Amer. Mus. N. H., and 1 male and 1 female in the U. S. Nat. Mus.

*Eremialector decoratus*—1 female in the Amer. Mus. N. H., and 1 female in the U. S. Nat. Mus.

*Eremialector lichtensteinii*—12 males and 5 females in the U. S. Nat. Mus. and 5 males and 5 females in the Sudan Govt. Museum, Khartoum.

*Eremialector bicinctus*—2 males and 2 females in the Amer. Mus. N. H.

*Eremialector fasciatus*—11 males and 10 females in the Amer. Mus. N. H. and 1 male in the U. S. Nat. Mus.

*Eremialector quadricinctus*—1 male in the Amer. Mus. N. H., 1 female in the Cleveland Mus. N. H., and 3 males and 1 female in the Sudan Govt. Museum, Khartoum.

### TAIL

NUMBER OF RECTRICES.—The number given for each species in the British Museum 'Catalogue of Birds' (Vol. XXII) is in some instances at variance with the results of counts made by me. No indication, however, is given there as to the source or number of specimens upon which this information is based.

TABLE I—NUMBER OF RECTRICES

	'Catalogue of Birds'	Number Counted in Specimens	Specimens Examined	Remarks
<i>Syrrhaptes paradoxus</i>	..	16	8♂, 4♀	
" <i>tibetanus</i>	..	..	..	Not counted
<i>Pterocles alchata</i>	16	16	1♂, 3♀	
" <i>namaqua</i>	16	16	2♂	
" <i>senegalensis</i>	..	16	24♂, 12♀	1♂ in Amer. Mus. had 18.
" <i>senegallus</i>	16	16	1♂, 1♀	
<i>Eremialector arenarius</i>	16	16	2♂, 4♀	
" <i>coronatus</i>	16	16	1♂	1♀ in Amer. Mus. had 18
" <i>gutturalis</i>	16	16	5♂, 8♀	
" <i>burchelli</i>	14	14	1 juv.	
" <i>personatus</i>	16	14	1♂, 2♀	
" <i>decoratus</i>	14	14	2♀	
" <i>lichtensteinii</i>	14	14	8♂, 3♀	
" <i>bicinctus</i>	16	14	2♂, 2♀	
" <i>fasciatus</i>	16	14	5♂, 3♀	
" <i>quadricinctus</i>	16	14	1♀	

The two instances of birds having 18 rectrices, instead of the usual 16, shows that in this character, which is generally constant, variation does occasionally occur, so that here may exist a possible source for the discrepancies between the figures given in the 'Catalogue' and those arrived at by me. Another and more likely source of error, however, lies in the long and stiffened tail-coverts which, unless carefully guarded against, may be included in the count.

SHAPE OF THE TAIL.—Two distinct types are exhibited: one wedge-shaped and the other rounded. In the former the middle pair of rectrices is noticeably longer than the succeeding pairs and the whole tail is well graduated. In this class belong all the long-tailed birds included in the genera *Syrrhaptes* and *Pterocles*, together with five short-tailed species of the genus *Eremialector*, viz.: *arenarius*, *coronatus*, *gutturalis*, *burchelli*, and *personatus* (see Fig. 1, *a-e*). The remaining five species, *decoratus*, *lichtensteinii*, *bicinctus*, *fasciatus*, and *quadricinctus*, constitute the second class, and agree in having the middle pair of rectrices hardly, if any, longer than the succeeding pair (see Fig. 1, *f-h*).

SHAPE AND LENGTH OF THE MIDDLE PAIR OF RECTRICES.—In their shape, this pair of feathers shows a close correlation with the shape of the tail as a whole; thus, all those species whose tails are wedge-shaped agree in having the middle pair of rectrices acutely pointed, whereas those with rounded tails have the middle pair broadly rounded (see Fig. 1). Elongation of the middle pair of rectrices occurs only in a portion of the former group (i.e., those with wedge-shaped, graded tails and pointed inner rectrices) and lack of correlation of this with any other character studied renders doubtful its value as a basis for generic separation.

COLOR PATTERN OF TAIL.—A further correlation is here exhibited. In general those species having graded tails with pointed inner rectrices are characterized also by having the middle pair colored somewhat differently from the remainder, whereas in the species with rounded tails no marked difference is observable between the middle pair and the others, and barring is more conspicuous throughout (see Fig. 1).

#### WING

SHAPE OF WING TIP.—A slight though distinct difference is here observable. The rounded-tailed forms, *lichtensteinii*, *bicinctus*, *fasciatus*, *quadricinctus*, and *decoratus*, have a somewhat more rounded wing-tip, due to the approximately equal length of the three outermost primaries,



whereas in all of the remaining species the outermost primary is distinctly the longest (see Fig. 2).<sup>1</sup>

RELATIVE PROPORTIONS OF THE WING.—Agreeing with, and to some extent resulting from, the relatively shorter outermost primary of the *lichtensteinii* group<sup>2</sup> is a difference of proportion between the length of the first (innermost) primary as measured from the bend to the tip with dividers, and the length of the wing to the tip of the longest primary (ninth or tenth as the case may be). This difference is shown in Table II.

TABLE II.—WING MEASUREMENTS<sup>3</sup>

	(I) To Tip of First Primary	(II) To Tip of Longest Primary	(III) To Tip of Longest Primary Covert	Approximate Proportion of I to II
<i>alchata</i>	9.65 cm.	20.60 cm.	10.45 cm.	Less than $\frac{1}{2}$
<i>namaqua</i>	9.05	16.90	8.90	Nearer $\frac{1}{2}$ than $\frac{2}{3}$
<i>senegalensis</i>	9.20	18.45	9.60	About $\frac{1}{2}$
<i>senegallus</i>	8.95	19.80	9.70	Less than $\frac{1}{2}$
<i>arenarius</i>	10.90	22.30	11.20	Less than $\frac{1}{2}$
<i>coronatus</i>	8.50	19.50	10.30	Less than $\frac{1}{2}$
<i>burchelli</i>	8.85	16.60	8.80	Nearer $\frac{1}{2}$ than $\frac{2}{3}$
<i>gutturialis</i>	10.30	20.85	11.40	About $\frac{1}{2}$
<i>personatus</i>	13.45	22.50	11.35	Nearer $\frac{2}{3}$ than $\frac{1}{2}$
<i>decoratus</i>	10.20	15.90	8.30	Nearly $\frac{2}{3}$
<i>lichtensteinii</i>	10.80	17.90	9.90	Nearly $\frac{2}{3}$
<i>bicinctus</i>	10.40	16.60	9.15	Nearly $\frac{2}{3}$
<i>fasciatus</i>	10.50	16.30	8.60	Nearly $\frac{2}{3}$
<i>quadricinctus</i>	11.75	18.80	10.40	Nearly $\frac{2}{3}$

That the relatively smaller difference in length between the first primary and the longest in the *lichtensteinii* group is not due entirely to a shortening of the wing tip is shown by a comparison of the length of the primary coverts (Column III) to that of the first primary (Column I).

SHAPE OF INNER PRIMARIES.—A further slight, but noticeable difference is seen in the shape of the innermost primaries. In all the wedge-shaped tailed, pointed-winged birds these feathers are acutely pointed,

<sup>1</sup>Unfortunately, the only specimen of *lichtensteinii* available for figuring lacks a primary on either side. A distinct gap makes certain that this is the eighth and in the figure the supposed shape and length of this primary is indicated by a broken line. This imperfection is of little consequence since the approximate equality in length of the ninth and tenth fully illustrates the rounded nature of the wing tip.

<sup>2</sup>Including *bicinctus*, *fasciatus*, *quadricinctus* and *decoratus*—*personatus* being rather intermediate.

<sup>3</sup>Measurements of single specimens only.

whereas in the *lichtensteinii* group they are broadly rounded (see Fig. 2). In this respect, however, *personatus* is somewhat intermediate (see Fig. 2,c).

#### COLOR PATTERN OF MALE.

The color pattern of the tail has already been discussed above, and reference has been made to the similarity of plumage in the four species, *lichtensteinii*, *bicinctus*, *fasciatus*, and *quadricinctus*. A few of the more striking features will now be discussed individually.

**FOREHEAD.**—A strikingly constant feature characterizing the four crepuscular birds is the presence of a white forehead crossed by a broad black band. Only in one other species, *decoratus*, is there any white on the forehead, and were it not that the black band is replaced by two black patches, strong evidence indicative of relationship would here exist. Notwithstanding this, the absence of white in all other species places *decoratus* distinctly nearer to the *lichtensteinii* group than otherwise.

**ABDOMEN.**—The *lichtensteinii* group is further characterized by having the abdomen conspicuously barred with black and white. In this respect *personatus* agrees, while *decoratus* approaches *arenarius* in having that region black, though the presence of white margins to the feathers indicates a not too close agreement.

**PECTORAL BAND.**—A broad bi- or tri-colored band separating the breast from the abdomen is a constant feature in the *lichtensteinii* group. In only one other species, *namaqua*, does this occur, though a narrow, white edging, superseding the single black pectoral band of *senegalensis*, is an approach in this direction. That the apparent agreement of *namaqua* to *bicinctus* in this respect is more superficial than real is suggested by a closer study of the birds. The additional band of white in *namaqua* is really only an exaggeration of the condition seen in *senegalensis*, whereas *bicinctus* seems better regarded as having lost one of the dark bands. In any case, the total lack of correlation with other characters in this instance subtracts from any weight that might here be placed.

**THROAT.**—All the wedge-tailed species excepting *burchelli* and *personatus* possess a conspicuous yellow wash on the throat and sides of the neck. This is replaced in *burchelli* by one of pale gray. In the absence of this, *personatus* agrees with the remaining five species, all of which are of the rounded tailed class.

TABLE III.—A SUMMARY

	Habits	Tail						Wing			Color Pattern of Male			
	C=Crepuscular D=Diurnal	Tail wedge-shaped	First pair of rectrices acutely pointed	First pair of rectrices greatly elongated	First pair of rectrices unlike others in color pattern	Tail strongly barred	Number of rectrices	Wing pointed. Tenth primary the longest	First primary nearer $\frac{1}{2}$ than $\frac{2}{3}$ the length of wing	Inner primaries broadly rounded	Forehead white with black band or spots	Abdomen barred	A bi- or tri-colored pectoral band	Throat yellow or gray
<i>alchata</i>	D	*	*	*	*		16	*	*					*
<i>namaqua</i>	D	*	*	*	*		16	*	*				*	*
<i>senegalensis</i>	D	*	*	*	*		16	*	*					*
<i>senegallus</i>	D	*	*	*	*		16	*	*					*
<i>arenarius</i>	D	*	*		*		16	*	*					*
<i>coronatus</i>	D	*	*		*		16	*	*					*
<i>gutturialis</i>	D	*	*		*		16	*	*					*
<i>burchelli</i>	D	*	*		*		14	*	*					*
<i>personatus</i>	?	*	*		*		14	*		* <sup>1</sup>		*		
<i>decoratus</i>	D					*	14			*	*			
<i>lichtensteinii</i>	C					*	14			*	*	*	*	
<i>bicinctus</i>	C					*	14			*	*	*	*	
<i>fasciatus</i>	C					*	14			*	*	*	*	
<i>quadrinictus</i>	C					*	14			*	*	*	*	

<sup>1</sup>Intermediate in character



## SUMMARY

The various characters discussed above are brought together in Table III and the following conclusions may be drawn.

1.—The elongation of the middle pair of rectrices is not correlated with any other character. Its use for generic separation is therefore, in the writer's opinion, inadequate and *Eremialector* must become a synonym of *Pterocles*.

2.—The difference in the number of rectrices, though in most cases showing a correlation with other characters, breaks down in one or two instances. As a character of systematic importance it is therefore indefinite.

3.—If these two characters be disregarded, all species (exclusive of the genus *Syrrhaptes*), excepting *personatus* and *decoratus*, fall naturally into one or another of two groups characterized by differences in habits, tail, wing, and color pattern.

4.—*Pterocles personatus* agrees with *alchata*, *namaqua*, *senegalensis*, *senegallus*, *arenarius*, *coronatus* and *burchelli* in seven of the characters studied, is intermediate in one and differs in four. (Its habits are unknown).

5.—*Pterocles decoratus* agrees with *lichtensteinii*, *bicinctus*, *fasciatus* and *quadricinctus* in ten of these characters, and differs in three.

6.—Recognition of these differences is considered desirable and the separation of the species *lichtensteinii*, *bicinctus*, *fasciatus*, *quadricinctus* and *decoratus* as a new genus is proposed. As there seems no name available for this purpose, I would propose the following.

**DILOPHILUS**, new genus<sup>1</sup>

The type designated *Pterocles lichtensteinii* Temminck, 1825, 'Pl. Col. livr.' 60. Pls. 355, 361; Nubia (=the northern part of the Anglo-Egyptian Sudan).

The characters upon which this genus is based are given in the following key:

- a.—Tail rounded and conspicuously barred; first (middle) pair of rectrices broadly rounded at their tips and similar in color pattern to the remainder. 14 rectrices. Wing somewhat rounded at tip, there being little difference in length between the three outermost primaries; tips of inner primaries broadly rounded; first primary nearer two-thirds than one-half the length of wing and

<sup>1</sup>Not until after this paper had gone to press did I learn of a paper by A. Roberts (1922, Annals Transvaal Museum, VIII, part 4, Oct. 30, pp. 195-196) wherein are described, as new, two genera of sandgrouse, viz:

a) *Calopteroles* [Genotype *Pterocles variegatus* (Burchell) = *Eremialector burchelli* W. Sclater] based solely on the number of rectrices. This, for reasons stated above, I am unable to recognize.

b) *Nyctiperdix* [Genotype *Pterocles* (*Eremialector*) *bicinctus* (Temminck)] characterized by its relatively short middle tail-feathers and general color characters. It is clear, therefore, that the five species, *lichtensteinii*, *bicinctus*, *fasciatus*, *quadricinctus* and *decoratus* must bear this name with which *Dilophilus* is synonymous.

exceeding the primary coverts in length. (See Table II). Forehead of male white with a broad black band (except in *decoratus* where there are two black spots); abdomen conspicuously barred and separated from the chest by a bi- or tri-colored pectoral band (except in *decoratus*); throat not conspicuously washed with bright yellow. Crepuscular in habits (except *decoratus*).....*Dilophilus*.

- b.—Tail wedge-shaped and graded; and with barring comparatively inconspicuous, or absent; first (middle) pair of rectrices acutely pointed (elongated in some) and differing somewhat in color pattern from the remainder. 16 rectrices in all but *burchelli* and *personatus*. Wing long and pointed, tenth primary distinctly the longest, first nearer one-half than two-thirds the length of wing (except *personatus*); all the primaries acutely pointed (somewhat rounded in *personatus*). Forehead of male never white; abdomen unbarred (except *personatus*); pectoral band absent or single (except *namaqua*); throat washed with bright yellow (except *personatus*). Diurnal in habits (not known in *personatus*).....*Pterocles*.