

11.

A Revision of the Subfamily Estrildinae of the Family Ploceidae.

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(Text-figure 1).

The thick-billed passerine birds generally known as finches have always aroused much human interest. They belong to a large number of species, the majority of which eat mostly seeds, are adapted to life in open country and have consequently taken well to the artificial conditions created by mankind, benefiting from agricultural cultivation. They have increased in number while less adaptable forest dwellers have decreased, and they are at present familiar inhabitants of our gardens, orchards and fields the world over. Most of them sing well; many are of attractive shape and colors; they are easy to feed, generally speaking, as they usually thrive on a diet of readily obtainable seeds, accordingly becoming popular cage birds. It is, therefore, only natural that they have attracted widespread attention.

But if their life habits have long been comparatively well known in the wild state and in captivity, finches have been less fortunate with systematic ornithologists. Until recently, they have been very arbitrarily classified according to relatively unimportant morphological characters. Only during the last thirty years was great progress made in the understanding of their true affinities. It now appears that the so-called finches consist of several distinct and not closely related groups of birds, whose thick bills, an adaptation to a seed diet, have been acquired independently in different families. But a further discussion of this important question is outside the scope of the present paper.

The whole finch group has been particularly well studied by the late Peter Sushkin (*Bull. Br. Orn. Club*, vol. XLV, pp. 36-39, London, Dec. 5, 1924) who discovered and interpreted valuable anatomical features; but several years earlier, James Chapin had already published "The Classification of the Weaver Birds" (*Bull. Amer. Mus. N. H.*, vol. XXXVII, Art. IX, pp. 243-280, New York, May 8, 1917) an exceedingly valuable contribution to the position of an important division of the thick-billed birds, the Ploceidae family. It was followed by another paper by Sushkin on the anatomy and

classification of the weaver birds (*Bull. Am. Mus. N. H.*, vol. LVII, Art. 1, pp. 1-32, New York, Oct. 24, 1927).

The three contributions just mentioned marked the start of a new era in the study of these birds. Since that time their authors' conclusions have been adopted and developed by all serious ornithologists.

About ten years ago, I published a "Monographie des Veuves" (*L'Oiseau*, Paris, 1933, pp. 521-562, 667-726; 1934, pp. 52-110), a detailed revision of two groups of weavers which had long been more or less confused, embracing the various species composing the two large genera *Euplectes*, of the Ploceinae, and *Vidua*, often associated with the Estrildinae, but which I consider to form a special, intermediate and more primitive subfamily, the Viduinae. In the above work, I was helped by M. F. Edmond-Blanc, who had a great deal of experience with weavers in their native countries and in aviaries; I am personally responsible for the systematic arrangement.

At that time, ten years ago, I had already promised myself to undertake a revision of the numerous, diversified and highly specialized members of the subfamily Estrildinae, popularly known as waxbills, grassfinches and mannikins, a most interesting gathering of beautiful little weavers, the largest of which is rather smaller than an English sparrow, while most of them are small, some even very small, certain kinglets, sunbirds, hummingbirds and a few others only being of equal or still inferior size.

Only this year was I able to study them thoroughly, thanks to the remarkable preparatory work done by my friends Drs. J. Chapin and E. Mayr in rearranging the large and excellent collections of these birds in the American Museum of Natural History. The present work has been based on them, and no better or larger series exist now in the whole world.

The old system of separating the Ploceidae into two subfamilies according to the size of the first primary, longer or shorter than the primary covert, and to that alone, is so obviously unnatural and wrong that it

was doubted as long ago as 1850 by Bonaparte, and afterward by Newton and even by Shelley, who, however, somewhat reversed his opinion later on.

Aviculturists who have kept, bred and studied weavers in captivity for well over a century, always more or less openly refused to adopt this artificial classification. This is quite evident in the avicultural literature. The late Dr. A. G. Butler, in particular, worked a great deal with these birds and published many articles and several volumes on them and their allies. His principal work, "Foreign Finches in Captivity," London, 1899, is an excellent book, full of the most useful biological information and systematic suggestions. The classification that he proposes, only from the amateur's point of view, as he puts it very unpretentiously, is for a great part perfectly acceptable, if still too respectful of old prejudices. Dr. Butler wrote as an aviculturist, but he was at the same time a professional entomologist at the British Museum, and an accomplished all-around naturalist.

In order to come to a better understanding of the position and affinities of the numerous forms of the subfamily Estrildinae, the first step to be taken is to formulate their principal characteristics. The deepest, most ancient and significant features must be considered first. Apart from the primordial anatomical particularities pointed out by Sushkin (*loc. cit.*), the really important characters in these birds seem to be as follows:

1. *Mouth marking in nestlings.* All very young Estrildinae show brightly colored, swollen bands or spots at the gape, and dark spots or lines on the palate or the tongue, or on both. Viduinae, an allied subfamily whose members are all parasitic on Estrildinae, show the same features, probably a late adaptation caused by parasitism.
2. *Color pattern of plumage.* Very highly specialized and diversified in Estrildinae, much more so than in any of the other weavers. Immatures always have a special dress, different from that of the adults of both sexes, which are unlike in a number of species, but often only to a slight degree. Females, when different from the male, always possess an elaborate plumage. The striated, sparrow-like brown livery which is worn by all immatures, females and males in eclipse, of the Ploceinae and Viduinae, is never found among Estrildinae, in either sex. With the one exception of the Indo-Malayan *Estrilda amandava*, no member of the Estrildinae has a seasonal eclipse plum-

age; even in this unique case, it bears no relation to the primitive eclipse dress of the Ploceinae and Viduinae.

3. *Life habits.* Estrildinae never weave elaborate nests like the Ploceinae. They build large, rough balls of grass and leaves, with a side entrance, which are usually located near or on the ground, in tough grass or bushes. They are not parasitic nor do they scratch the ground in search of food, like the Viduinae. They lay a large number of eggs, always white. Their courtship and voice vary in the different groups and constitute excellent discriminating characters second only to mouth markings in juveniles.

The above three groups of characteristics are the only ones that are truly diagnostic as far as subfamily and tribe go. Morphological characters, long considered of first importance, are really secondary and can only be used for lower divisions, generic, subgeneric and specific:

- a. *The bill* in Estrildinae varies greatly in shape, length, thickness and color. As in all Ploceidae, the culmen is more or less extended back in a wedge between the feathers of the forehead. It is usually brightly colored, never horny brown, a primitive feature. Its shape is of value and often distinctive of genera and subgenera, but its size varies very much according to species and subspecies. Over-estimation or faulty interpretation of its significance has led to many mistakes.
- b. *The legs* do not vary much in the whole sub-family, but the toes become increasingly long in the mannikin group, where they provide good subgeneric or specific characters.
- c. *The tail* may be long or short, narrow or wide, rounded or graduated, or even sharply pointed, but it varies very greatly in length in obviously closely related forms and, on many occasions, it is of no more than specific value. The upper tail-coverts, in several species, are lengthened, decomposed and brightly colored.
- d. *The wing formula* was previously considered of paramount importance but this view has been abandoned since its relative insignificance has been pointed out by Chapin and recognized by Sushkin and others.

The old, but largely wrong, classification of finches and weavers rested on the absence, presence and size of the first or outermost of the ten primaries. In fact, this feather is always present. It is almost invisible (very small and rotated to a concealed position on the dorsal side of the

wing) in many groups: Fringillidae, Emberizidae, Passerinae; it remains very short and pointed in several Ploceinae (*Euplectes*), the Viduinae, and in all Estrildinae except *Clytospiza* and *Spermophaga* where it is well developed. It is larger, but in various degrees in most Ploceinae. A large first primary is in fact no more than a primitive character, which shows up in various groups and does not indicate any close connection between them. It is only of generic value. As Sushkin has said, a declining organ cannot serve as a taxonomic criterion.

The relative length of the other primaries also is only of minor importance. In several cases it is useful as a subgeneric character, while in others it is only a specific feature, as changes are irregular or gradual among closely allied forms. This happens in the large genus *Estrilda* where they seldom accompany other more important differences, and they never can constitute a generic distinction. The shape of the second primary is also variable and of no great importance. In the majority of species, it is normal in its general shape, broader or narrower and more or less pointed. But in all *Pytilia* and in a number of *Estrilda* of the subgenus *Lagonosticta* (*senegala*, *rubricata*, *larvata*) it is compressed near the tip, pointed and cut away, showing a distinct notch. This is hardly visible and somewhat individually variable in *Estrilda* (L.) *rara* and in *E. angolensis*; it is absent in all other species, including *Estrilda* (L.) *rufopicta*, *caerulescens* and *jamesoni* which in all other respects are extremely similar to the species with a notched second primary. It cannot therefore be of but specific significance.

Taking into consideration all the above enumerated characteristics in the light of their real importance, I have come to the following conclusions:

The subfamily Estrildinae can be divided into three large natural groups, which I shall call tribes: Estrildae (waxbills), Erythrurae (grassfinches), and Amadinae (mannikins). Each of them contains respectively: the Estrildae, 9 genera (*Parmoptila*, *Nigrita*, *Pytilia*, *Hypargos*, *Cryptospiza*, *Pirenestes*, *Spermophaga*, *Clytospiza*, *Estrilda*); the Erythrurae, 3 genera (*Zonaegeinthus*, *Poephila*, *Erythrura*), and the Amadinae, 3 genera (*Padda*, *Amadina* and *Lonchura*), some of which in turn can be split into several subgenera. These divisions seem necessary to give an adequate idea of the relationship of the birds to one another. It must of course be understood that in current nomenclature, only the generic, specific and subspecific designations can be included in the scientific name.

Several of the different genera tentatively

included by Chapin, Sclater and others in the Estrildinae do not seem really to belong to this subfamily.

I have removed the genus *Vidua* (subgenera *Hypochoera*, *Vidua* and *Steganura*) for which I have created a special subfamily (see reasons in "Monographie des Veuves," *L'Oiseau*, 1934, p. 523.)

I am also unable to include in this subfamily the genera *Pholidornis* and *Anomalospiza*. The streaked plumage of *Pholidornis*, the anatomy of its tongue, and the shape of its bill, as well as the proportions of its wings and tail, appear to remove it considerably from the Estrildinae. Its suggested similarity to *Parmoptila* seems entirely superficial. I could reverse my opinion only if it was found that the nestling shows beyond doubt the mouth markings peculiar to the waxbills. Until then, I shall agree with Bates who placed these birds near *Hylia* in a separate family (Hylidae) between the zosterops and the sunbirds. (Handbook of the Birds of West Africa, 1930, p. 462).

Anomalospiza imberbis is nothing but a Ploceine weaver. Like many of them, the male has a distinct breeding plumage, yellow below, olive streaked with dark brown above. The "sparrow-like" streaked brown plumage of the males in eclipse, females, and immatures is similar to that of many of the Ploceinae. Its short first primary is like that of *Euplectes*. *Anomalospiza* has a very peculiar bill, somewhat recalling in shape that of *Pirenestes*, but of the same colors as that of the average Ploceinae, changing according to season. Another peculiarity of this bird is its parasitism, which has now been ascertained. Van Someren found its young in the nest of a *Cisticola*, and Austin Roberts found its young in a nest of *Prinia flavicans*. In this peculiar habit, *Anomalospiza* recalls the Viduinae, which also are all parasitic, but this fact does not seem to imply near relationship. Each species of *Vidua* is the parasite of one or several closely related forms of waxbills, and the specificity of this adaptation is proved by the almost identical mouth pattern of the nestlings and juvenile dress of the parasite and of its victim.

Anomalospiza appears to be a more or less indiscriminate parasite on various small warblers, a less advanced stage in parasitism than that of the Viduinae. So far we do not know that the nestling of *Anomalospiza* has any Viduine and Estrildine mouth pattern, and it is better placed at the end of the Ploceine weavers, in the vicinity of *Euplectes*.

In the light of the above remarks, the subfamily Estrildinae can be defined as follows:

Small weaver-finches of highly specialized color pattern, never showing a primitive

streaked sparrow-like brown plumage and horn-colored bill; sexes alike or different; immatures always different from adult females. No eclipse plumage in males, with one exception. Nestlings always showing brightly colored, swollen spots, lobes or bands at the gape, and an ornamentation of the tongue or palate, consisting of spots or lines. Eggs numerous and always white; nests globular with a side entrance, but not woven. Young birds become adult within a year of their birth and are then able to breed, while it takes two years for young Viduinae and Ploceinae to mature. Peculiar song and courtship variable but consistent, in a general way, in large groups of genera. Ten primaries in the wing, the first being very short and falcate, with the exception of two genera (*Clytospiza* and *Spermophaga*) where it is moderately long. Not parasitic.

As pointed out above, there are obviously three major divisions, or tribes, in the subfamily: the waxbills, the grassfinches and the mannikins.

- A. The first one, the waxbills (*Estrildae*) is composed of birds whose nestlings show brightly colored warts or lobes at the gape and dark spots regularly arranged on the palate or the tongue. These spots on the palate vary in shape, in size, and in number from 7 (*Poephila phaeton*) to 1 (*Pytilia melba*), even disappearing in the exceptional case of two species (*melanotis*, *phoenicoptera*). In most cases there are black marks on the tongue. All waxbills have high-pitched, chirping or sweet calls and song, much like the true Cardueline finches, and they utter them beak upward. Often, the courtship of the male includes a dance during which he holds in his beak a blade of grass, which he seems to offer to the female and drops at the right moment. In addition to these two main characteristics, waxbills differ from the two following groups in their general shape and proportions; their head is comparatively smaller, their legs longer and their toes shorter; their wings and tails are proportionately longer; they are more elegant, more active and more spritely. The majority of waxbills are Ethiopian and they are represented by only two species in Asia and Malaysia and one in Australia (*Estrilda formosa*, *E. amandava*, *E. temporalis*).
- B. The second group, the grassfinches (*Erythrurae*), is intermediate between the other two. The mouth markings of the nestlings are nearer to the waxbills, but they have an unmelodious voice, clucking, mournful, trumpeting, metallic or low, never sweet, chirping and finch-like. Their song and courtship are very peculiar, different from those of the waxbills, and more similar to the mannikins'. The cock sits still, the flank feathers puffed out, the neck extended vertically and the beak turned downward, while he emits, apparently by a great effort, a kind of melody, sometimes inaudible. At the same time, he raises himself up and down with a lateral twisting. There are many degrees and minor variations in this ventriloquial performance according to species, and those of the genus *Zonaeginthus* include grass offering. The grassfinches are less quick and are heavier than the waxbills, but less clumsy than the mannikins. Some are nearer in looks to the waxbills (*Zonaeginthus*, *Poephila phaeton*, *P. ruficauda*), while others recall more the mannikin (*Poephila modesta*). These similarities, however, are only superficial and the whole group clearly stands between the other two. The link that the grassfinches provide constitute the very reason why the waxbills and the mannikins cannot be separated in two different subfamilies, as Sushkin and myself had tentatively suggested previously. All grassfinches have highly elaborate plumage and some of the most beautiful birds are found among them. Their bills are usually of a vivid color. Sexes are either alike or different, in almost equal proportion. They inhabit Australasia and Malaysia, one species (*Erythrura prasina*) extending its range to S. E. Asia (N. Laos). Australia is their stronghold.
- C. The third group, the mannikins (*Amadinae*) is characterized by a special pattern of the mouth of the nestlings. Their palate shows horseshoe-like dark lines or large blotches. The gape has a more or less swollen line, but no warts or lobes. The voice differs according to species, but in general it is like that of the grassfinches, clucking or trumpeting, and their song dance is the same sort of a ventriloquial performance, even more static. Mannikins are heavier still; their bill and head are massive, the wings and tail short, their body long. The toes and nails are very long and slender in several species. Their general appearance is clumsy. They are garbed in more somber hues than the waxbills and the grassfinches, but their plumage remains highly specialized; various vivid shades of reddish and yellowish-brown, black, gray and white, disposed in showy patterns, constitute elaborate dresses. Their bill is either silver or lead gray, or black, one species having it pink (*Padda oryzivora*), another one black and red (*Lonchura nana*) and two others (*Amadina*) flesh color or gray.

With the exception of the genus *Amadina*, where differences are slight (absence or presence of red on the head or throat), both sexes are alike or nearly so, in all species of mannikins, and immatures have a plainer dress, very similar to that of many waxbills. Mannikins inhabit the whole distributional area of the sub-family and are particularly numerous in the Malaysian and New Guinean regions.

As long as the mouth pattern of every species has not been finally recorded, some doubt will remain as to the position of a few species. But judging from our present knowledge which extends to members of most genera, the chance of mistakes is slight. It is, however, very necessary that everyone who has an opportunity to examine nestlings of Estrildinae, in the field as in aviaries, never neglects to register this most important characteristic.

The mouth pattern of the following species has so far been accurately recorded: *Spermophaga poliogenys*, *S. guttata*, *Clytospiza monteiri*, *Pirenestes ostrinus*, *Hypargos nitidulus*, *Nigrita canicapilla*, *N. luteifrons*, *N. fusconata*, *Parmophila woodhousei* (*jamesoni*), *Pytilia melba*, *P. phoenicoptera*, *Estrilda rara*, *E. senegala*, *E. rubricata*, *E. angolensis*, *E. granatina*, *E. ianthinogaster*, *E. erythronotos*, *E. astrild*, *E. melpoda*, *E. nonnula*, *E. atricapilla*, *E. melanotis*, *E. capistrata*, *E. subflava*, *E. amandava*, *Zonaeginthus pictus*, *Z. guttatus*, *Poephila phaeton*, *P. guttata* (*castanotis*), *P. bichenovi*, *P. cincta*, *P. acuticauda*, *P. personata*, *P. gouldiae*, *Erythrura psittacea*, *Padda oryzivora*, *Amadina fasciata*, *Lonchura fringilloides*, *L. malabarica*, *L. bicolor*, *L. cucullata*, *L. pectoralis*, *L. striata*, *L. punctulata*, *L. castaneothorax*.

The nearest relations of the Estrildinae would seem to be the Viduinae, their specific parasites. The Estrildinae, however, are a good deal more specialized than the Viduinae and represent the most advanced branch of the whole family Ploceidae. As there exists no transition between them, it appears that their similarities are due to recent adaption and I have come to the conclusion that the Estrildinae have probably evolved independently from the Sporopipinae, just as have the Viduinae and the Ploceinae.

I hardly dare to suggest here that the very peculiar Celebean bird *Scissirostrum dubium* may prove to be related to the Estrildinae. This curious species, with its large pale yellow bill, its gray dress, brightened by shiny crimson on the rump and upper tail-coverts, and its pointed tail, is probably not a true starling, as has been generally accepted. In spite of its large size, it may show affinities to *Erythrura klein-*

schmidtii and to *Padda oryzivora*. Only a detailed anatomical and behavior study, and the examination of nestlings, may solve the question. But live specimens in my aviaries at Clères originated in my mind the possibility of their distant relationship to the Ploceidae. *Scissirostrum* may be a relict of forms which at some time stood between the weavers and the starlings. I am inclined to think that the Ploceidae are really nearer to the Sturnidae than to the Fringillidae, and their nesting habits indicate it. Nests placed in holes are less different from covered nests than the latter are from open, cup-shaped ones.¹ The same suggestion can perhaps even be made for another very peculiar Celebean species: *Enodes erythrophrys*, a still more aberrant bird.

Within the three major divisions indicated above, Estrildinae form very closely allied and rather poorly defined groups and the discrimination of genera, subgenera and species is not easy.

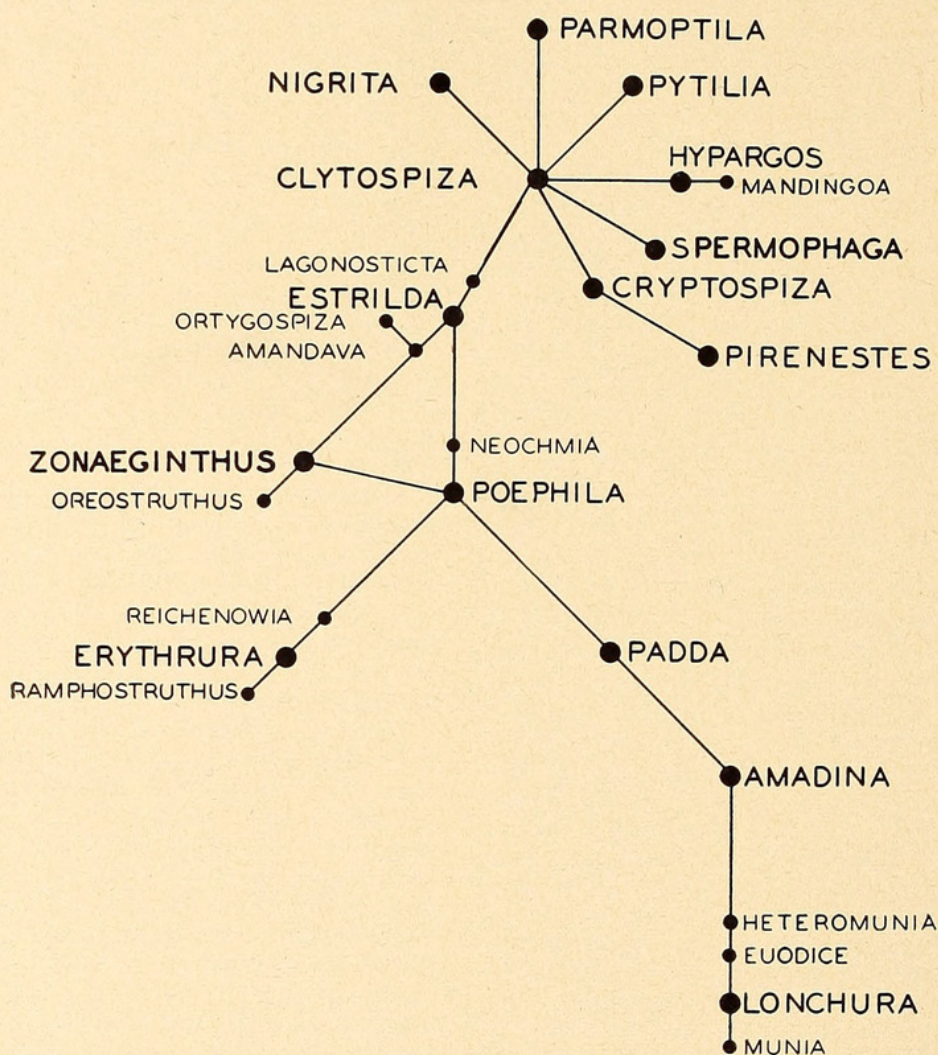
Considering that the presence of a well developed first primary is a primitive character, existing in the ancestral Sporopipinae, it is obvious that the two genera *Clytospiza* and *Spermophaga* represent the most primitive of Estrildinae. Consequently, the waxbill group is also the most primitive of the subfamily.

Clytospiza being much more generalized than *Spermophaga*, I consider it as the central nucleus of the whole subfamily. It contains three species, considerably different, but clearly related generically, and in turn each species is linked by some characters to other genera.

Clytospiza monteiri is gray above, reddish-brown mottled or spotted with white below, with crimson upper tail-coverts. The male has a triangular crimson patch on the throat. The beak is relatively long and curved, the tail rather short. The slender-billed, short-tailed genera *Nigrita*, *Parmoptila* and *Pytilia* are linked to it, but they all have a short first primary.

Clytospiza dybowskii has a slightly thicker bill, still rather long; it is blackish-gray, with a crimson back and a black abdomen spotted with white. It is certainly related to the large-billed, red-and-black males, red-and-gray females of *Spermophaga*, the only other genus to retain a large first primary, and whose female has a white-spotted abdomen. It is close to the genus *Hypargos*, which differs practically only in its short first primary. It is also not far from the unspotted, olive or gray genus *Cryptospiza*, which has a crimson back and a thicker bill, and which in turn leads to the huge-billed *Pirenestes*.

¹ Under the artificial conditions of captivity, birds building normally domed nests usually take readily to nesting in boxes and hollow logs. Some starlings (*Spreo* and *Acridotheres*) build domed nests.



TEXT-FIG. 1. Relationship of the Estrildinae.

The third species, *C. cinereovinacea*, has a longer tail and a small bill. But for its long first primary, it would be a true *Estrilda*. In its dark gray plumage with dark crimson lower back and upper tail-coverts, and its crimson flanks, minutely spotted with white, it resembles closely the members of the subgenus *Lagonosticta*. The large genus *Estrilda* leads to the grass-finches: *Zonaeginthus* on one side, *Poephila* on the other. *Poephila* in turn leads to *Erythrura* through *P. gouldiae*, and through *P. modesta*, to the mannikins: *Padda*, *Amadina* and *Lonchura*.

As we shall see further on, some of these genera can be conveniently divided into subgenera on less important characters. The accompanying diagram shows the natural relationship of these different groups

of Estrildinae, which cannot be explained in a linear sequence.

We shall now study the different genera, subgenera and species, much as we have done before in "A revision of the genera and species of the family *Pycnonotidae*."² I shall not attempt to review critically all the subspecies, confining my remarks to interesting facts involving certain races and to the grouping of forms within a species. The sequence adopted below is perforce partly artificial, and as I have just remarked, only a diagram can give a proper idea of relationships.

In the present study, the numbers of genera and species have been reduced to 15 and 108 respectively. The numbers quoted in the *Systema Avium Aethiopicarum*, by W.

² *Zoologica*, Vol. XXVII 1943, pp. 17-28.

L. Sclater, the Fauna of British India, by E. C. Stuart Baker, the Handlist of Malaysian Birds, by F. N. Chasen, and the Systema Avium Australasiarum, by G. Mathews, amount to 50 genera and 137 species. Those quoted in two or more of the above works have been counted as one, and all known genera and species are included in these lists.

In reducing the number of genera, I have strictly followed the indications of the important characters mentioned earlier. Less

important ones have been considered for subgeneric distinctions, numbering 11. I have incorporated as subspecies of the same species forms which differ only in degree from one another, whether in proportions or in colors, and which replace one another geographically. I have kept as separate species all those geographical representatives whose color pattern is sufficiently and truly different, indicating superspecies relationships whenever necessary, following here the lines of my previous revisions.

A. THE WAXBILLS (ESTRILDAE).

I. GENUS *Spermophaga*.

Swainson, 1837. Type: *Spermophaga haematina*.

Size large.

Bill large and thick, bluish-gray and orange; both mandibles convex. Wing much rounded; 1st primary large, longer than one-half of 2nd, which is shorter than 3d and 10th; 4th, 5th, 6th and 7th longest and subequal. Tail moderate, broad and rounded, shorter than wing. Plumage of males black and red; females dark gray and red with abdomen gray-spotted all over with large terminal white dots.

Live in pairs in forest thickets.

1. *S. poliogenys*. Grant's Blue-billed Weaver. Belgian Congo.
2. *S. ruficapilla*. Red-headed Blue-billed Weaver. C. Africa, from Belgian Congo and Angola to Kenya and Tanganyika.
3. *S. haematina*. West African Blue-billed Weaver. West Africa, from Gambia to Portuguese and Belgian Congo.

II. GENUS *Clytospiza*.

Shelley, 1896. Type: *Pytelia monteiri*.

Size medium.

Bill moderate and variable in length as in *Estrilda*. Wing much rounded; 1st primary large, reaching one-half or more of the 2d, which falls short of the 3d by about one-fifth; other primaries more or less subequal. Tail moderate, rounded and broad. Plumage variable, mostly gray, black, crimson or reddish-brown; upper tail-coverts always red; white spots on abdomen and sides of the breast. Sexes alike or slightly different.

Live in bushes, in open country.

1. *C. monteiri*. Brown Twin-Spot. Portuguese Congo, N. Angola and E. Cameroon to Barh-el-Ghazal, Upper White Nile and Uganda.
2. *C. dybowskii*. Dusky Twin-Spot. N. Cameroon to Ubangi-Shari and Upper Uele.
3. *C. cinereovinacea*. Dusky Fire-finch. Angola and Belgian Congo.

Note: This genus can only be upheld on account of its very peculiar and primitive wing formula. But for that, *C. monteiri* and *C. dybowskii* could be referred to *Hypargos*, and *C. cinereovinacea* to *Estrilda*. However, the significance of their long first primary cannot be ignored.

III. GENUS *Hypargos*.

Reichenbach, 1863. Type: *Spermophaga margaritata*.

Size medium.

Bill rather long and strong. Wing variable; 1st primary minute; tail broad, rounded, moderate or short. Plumage brownish or greenish above; breast and upper tail-coverts crimson, orange or yellowish; flank feathers with large round twin spots, white or pale pink. Sexes different.

Live in thick bushes, in open country.

Subgenus *Hypargos*.

Tail longer; wing very round, 2d primary much shorter than 3d; 4th and 5th longer. Bill thicker, culmen more curved.

1. *H. niveoguttatus*. Rosy Twin-Spot. Portuguese East Africa (Inhambane).
2. *H. margaritatus*. Peter's Twin Spot. Kenya, Tanganyika and Nyassaland to Portuguese East Africa, Mashanoland, N. Rhodesia and Katanga.

Subgenus *Mandingoa*.

Hartert, 1919. Type: *Estrilda nitidula*.

Bill slightly thinner and straighter. Tail much shorter. Wing sharper, 2d and 3d primaries subequal and longest, in contrast to *Hypargos*.

3. *H. nitidulus*. Green-backed Twin-Spot. Sierra Leone to Natal.

IV. GENUS *Cryptospiza*.

Salvadori, 1884. Type: *Pytelia reichenowi*.

Size medium to large.

Bill stout and thick, culmen curved. Wing rounded; 1st primary minute, 2d shorter than 3d; 4th and 5th longest. Tail short and

broad, rounded. Legs rather long and strong. Plumage gray, brown or olive, the back and upper tail-coverts crimson. No spots. Sexes alike, or nearly so.

Live in forest, at high altitude.

1. *C. shelleyi*. Shelley's Crimson-wing. Ruwenzori and Kivu mountains.
2. *C. salvadorii*. Salvadori's Crimson-wing. Mountains of E. Africa to Ruwenzori.
3. *C. reichenowi*. Red-eyed Crimson-wing. Cameroon Highlands to Ruwenzori, Kivu and Uluru Mts.; Fernando-Po.
4. *C. jacksoni*. Dusky Crimson-wing. Ruwenzori and Kivu Mts.

Note: *Cryptospiza* are forest birds of the high altitudes of Central Africa. *C. shelleyi* differs considerably in size, bill and color pattern, while the other three are more closely related. Since all of them are found together on Ruwenzori and other mountains, they must constitute separate species.

V. GENUS *Pirenestes*.

Swainson, 1837. Type: *Pirenestes sanguineus*.

Size large, but variable, even within the same species.

Bill large and very stout, rather short and pointed, of a very peculiar shape; culmen and sides nearly straight. Wing moderately rounded; 1st primary minute; 2d equal to 7th; 4th and 5th longest. Tail rounded and moderate. Legs rather long. Plumage black and red, or brown and red. Throat and upper breast, tail and upper coverts always bright crimson. Sexes different or almost alike.

Live in swamps and paddy fields surrounded by trees and bushes, forest clearings and edges.

1. *P. minor*. Eastern Seed-cracker. East Africa, from Nyassaland and Tanganyika to Mozambique.
2. *P. sanguineus*. Crimson Seed-cracker. West Africa, from Senegal to Liberia.
3. *P. ostrinus*. Black-bellied Seed-cracker. West Africa, from Togoland to Angola, east to Uganda.

VI. GENUS *Nigrita*.

Strickland, 1842. Type: *Aethiops canicapilla*.

Size large to small.

Bill long and slender, flattened at the nostrils. Wing rather sharp; 1st primary minute; 2d slightly shorter than 5th; 3d and 4th longest. Tail broad and rounded. Legs rather short and weak. Plumage variable, upper and underparts always of contrasting colors, never with bright hues and confined to black, gray, chestnut, brown and white. Sexes alike or only slightly different.

Live usually in forests, along water courses, on trees, and often feed on the pulp of oil-palm nuts, fruit and insects.

1. *N. canicapilla*. Gray-headed Negro-finch. From Sierra Leone to Angola, east to Kenya, Uganda and Tanganyika.
2. *N. luteifrons*. Pale-fronted Negro-finch. West Africa, from S. Nigeria to E. Belgian Congo, and Fernando-Po.
3. *N. bicolor*. Chestnut-breasted Negro-finch. From Portuguese Guinea to Gaboon, east to Belgian Congo and Uganda.
4. *N. fusconota*. White-breasted Negro-finch. From Gold Coast to Uganda; Fernando-Po.

Note: The Negro-finches are aberrant waxbills, whose slender bill is an adaptation to a diet of soft pulp and insects. But they are true waxbills in their nesting habits and the domino-marked palate of their chicks, showing five black spots.

VII. GENUS *Parmoptila*.

Cassin, 1859. Type: *Parmoptila woodhousei*.

Size small.

Bill very slender and deeply depressed at the nostrils. Wing slightly more rounded than in *Nigrita*; 3d, 4th and 5th primaries subequal. Plumage brown above; throat reddish-brown; underparts freckled or laced olive, brown, white or plain reddish-brown, according to race and sex.

Habits similar to *Nigrita*. Live on trees and feed on insects and nut pulp.

1. *P. woodhousei*. Flower-pecker Finch. West Africa, from Gold Coast to Angola and Belgian Congo.

Note: Very aberrant by reason of its thin bill, *Parmoptila* has the characteristic nesting habits and domino palate in nestlings of the true waxbills. Its connection with *Clytospiza monteiri*, if not very strong, is more visible than in *Nigrita*. All the forms seem to be subspecies of the same species. The fact that the male *P. w. jamesoni* is plain chestnut-red below and has the whole fore part of the crown crimson is only a difference in degree of pigmentation and does not warrant specific division. The female *jamesoni* and both sexes in other forms are very similar.

VIII. GENUS *Pytilia*.

Swainson, 1837. Type: *Pytilia phoenicoptera*.

Size medium.

Bill rather long and pointed; culmen slightly curved and compressed at the sides near the end. Wing rather sharp; 1st primary minute; 2d, equal to 6th, compressed,

pointed near the tip and cut away; 3d, 4th and 5th the longest. Tail short and slightly rounded. Feet moderate. Palate markings of nestlings reduced to one spot or none at all. Plumage barred or freckled with white below; tail-coverts and tail red.

Live in bushes in open, dry country.

1. *P. melba*. Melba Finch. Ethiopian region, from Senegal, Abyssinia and Erythrea to Natal and Damaraland.
2. *P. afra*. Red-faced Finch. From Ivory Coast to Abyssinia south to Beira, N. Rhodesia and Angola.
3. *P. phoenicoptera*. Aurora Finch. Senegal to Gold Coast, east to Abyssinia, Egyptian Sudan and N. W. Uganda.

Note: *P. hypogrammica* is evidently the western representative of *P. afra*. Their differences are only of degree and of subspecific importance. *P. hypogrammica* has less yellow pigment, and the result is that its underparts are gray, instead of gray strongly suffused with olive yellow as in *afra*; its wings golden olive, instead of coppery orange; but otherwise both forms are entirely similar, except for the bill, which is black in *hypogrammica* and red in *afra*. The same state of things is found in the species *phoenicoptera*: the eastern race *lineata* has a red bill, while the western birds, *emini* and *phoenicoptera*, have it black. *P. lopezi* is either a color phase or a local race of *P. afra*.

IX. GENUS *Estrilda*.³

Swainson, 1827. Type: *Loxia astrild*.

Size medium to very small.

Bill moderate or short, variable; culmen slightly curved to nearly straight. Wing moderately rounded and slightly variable; 1st primary minute or very small; 2d and 5th about equal; 3d and 4th longest, but not greatly so, and sometimes subequal with 2d and 5th. Tail graduated and long to rounded and short. Legs moderate. Plumage bright, sometimes cross-barred, but never spotted with large twin dots on the feathers of the underparts. Sexes similar or different.

Live usually in open grass and bush country, marshes, outskirts of woods and clearings, or near cultivation.

Subgenus *Lagonosticta*.

Cabanis, 1851. Type: *Fringilla rubricata*.

Bill rather long and compressed laterally near the tip; culmen slightly curved. Wing rounded, 2d primary pointed and cut away in three species. Tail broad and rounded. Plumage brown or gray, marked with black and different shades of crimson and pink.

³ For taxonomic remarks on *Estrilda*, see Wolters, *Orn. Monatsb.*, Berlin, 1939 pp. 33-37.

Upper tail-coverts always red, except in *A. rufopicta harterti*. Sides with minute white spots, except in one species (*E. rara*). Sexes different with the exception of two species (*rufopicta*, *caerulescens*). Live often in villages or near cultivation, but also in the brush. They are not gregarious.

1. *E. rufopicta*. Brown Fire-finch. Senegal, east to the Upper Nile, south to N. Angola, N. Rhodesia, Katanga and Lake Tanganyika.

2. *E. senegala*. Red-billed Fire-finch. The greater part of the Ethiopian region.

3. *E. jamesoni*. Jameson's Fire-finch. N. Transvaal, Bechuanaland and Metabele country to the Zambesi; Angola; coastal Kenya.

4. *E. rubricata*. Dark Fire-finch. The greater part of the Ethiopian region, except the southwest.

5. *E. rara*. Black-bellied Fire-finch. Cameroon and Nigeria to Upper White Nile.

6. *E. larvata*. Masked Fire-finch. Senegal to Cameroon, east to Abyssinia, Bahr-el-Ghazal and N. Uganda.

7. *E. caerulescens*. Lavender Finch. West and South Africa.

Note: The lack of very great significance of the pointed and notched second primary is illustrated by the fact that three species show it (*senegala*, *rubricata*, *larvata*) while three others do not (*rufopicta*, *caerulescens* and *jamesoni*), and *rara* is intermediate. But I think it is of specific value, and therefore I separate *jamesoni*, *benguellensis* (= *ansorgei*) and *teruensis* from *rubricata*. On the other hand, as *landanae*, which shows it, does not overlap geographically with any form I ascribe to *rubricata*, I consider it a subspecies of the latter species; the rather special coloration of its bill does not deserve specific distinction.

I consider *rufopicta* and *harterti* (= *nitidula*) as conspecific. The fact that *harterti* lacks red on the upper tail-coverts and rump, is altogether paler, has less pink and larger white spots on the breast, does not seem to warrant specific rank; it is only a difference in degree in the red pigmentation.

It is curious that *larvata* has been so often removed from the *Lagonosticta* group, as it shows distinctly all its essential characters; *vinacea* and *nigricollis* are obviously subspecies of *larvata*. *E. caerulescens* is the nearest to the subgenus *Estrilda*; it includes the southern black-tailed races often separated as *E. perreini*.

Subgenus *Estrilda*.

Bill variable, but shorter than in *Lagonosticta*. Wing varying within the limits of the genus; second primary never cut away. Tail narrow and long (*granatina* and *erythronotos*) to short and moderately

broad (*melanotis* and *shelleyi*). Plumage varied, sometimes finely lined transversely, never coarsely barred below, nor minutely spotted on the sides of the body. Always some bright crimson, blue, mauve or yellow on the face or on the upper tail-coverts, or on both. Sexes generally alike, sometimes slightly different.

Live in open country, clearings and cultivation, usually in flocks.

8. *E. cyanocephala*. Blue-headed Waxbill. Kenya, from Kilimanjaro to N. Guaso Nyiro.

9. *E. angolensis*. Cordon-bleu Waxbill. The greater part of the Ethiopian region.

10. *E. ianthinogaster*. Purple-bellied Waxbill. N. E. Africa, from Abyssinia and Somaliland to Kenya, N. Tanganyika and N. Uganda.

11. *E. granatina*. Violet-eared Waxbill. S. W. and South Africa, from Angola to the Transvaal, the Orange Free State and Griqualand West.

12. *E. erythronotos*. Black-cheeked Waxbill. East and South Africa, from S. Abyssinia and Somaliland to Damaraland, Great Namaqualand, W. Matabeleland and the Transvaal.

13. *E. astrild*. St. Helena Waxbill. The greater part of the Ethiopian region, south of Sierra Leone and the Egyptian Sudan.

14. *E. rhodopyga*. Crimson-rumped Waxbill. East and N. E. Africa.

15. *E. troglodytes*. Gray Waxbill. West Africa, from Senegal to N. Cameroon and east to the Upper Nile and the Shari rivers; S. W. Arabia.

16. *E. temporalis*. Sidney Waxbill. E. Australia.

17. *E. melpoda*. Orange-cheeked Waxbill. West and East Africa, from Senegal to Angola, east to Abyssinia and N. Rhodesia.

18. *E. atricapilla*. Black-headed Waxbill. Cameroon and Belgian Congo, east to central Kenya.

19. *E. nonnula*. Black-crowned Waxbill. Fernando-Po and Cameroon, east to W. Kenya.

20. *E. melanotis*. Dufresne's Waxbill. East and South Africa, from Abyssinia to the Cape Colony.

21. *E. shelleyi*. Olive-backed Waxbill. Fernando-Po, Cameroon, Uganda and Belgian Congo.

22. *E. capistrata*. Gray-headed Waxbill. West Africa from Gambia to Cameroon, east to Barh-el-Ghazal and Lake Albert.

Note: I find it impossible to draw a line between the different species of the subgenus *Estrilda*. Changes in coloration, size and shape of the bill, length of the tail or wing formula are so gradual and indepen-

dent of one another, that I cannot recognize even as subgenera *Uraeginthus*, *Coccopygia* and *Nesocharis*. *E. erythronotos* has proportionally as long a tail as any "*Uraeginthus*." The bill of "*Coccopygia*" *melanotis* is neither thicker nor more curved than that of *E. melpoda* or *E. atricapilla*, nor more part-colored than in the latter species, and the shortness of its tail is of no more than specific value. The same applies to "*Nesocharis*" *shelleyi* and *N. capistrata*, and their special coloration is not more peculiar than that of several other species.

I have united specifically a number of forms usually so far considered separate species. It is now proved that *E. angolensis* and *E. bengala* replace one another geographically and intermediates have been found between them; I consider therefore the different forms of *E. bengala* as subspecies of *E. angolensis*, the oldest name. *E. cyanocephala* is a very close, but separate species, as it cohabits with forms of *E. angolensis*.

E. charmosyna is but a northern, pale, dry country form of *E. erythronotos*, with *delamerei* as a link. The latter does not coexist with *charmosyna* although they may both meet and interbreed on their boundary, a very normal state of things for two subspecies.

The Arabian waxbill, *E. rufibarba*, is better considered a race of *E. troglodytes*, of which it has the black rump, although it has the black bill of *E. rhodopyga*. *E. xanthophrys* and *E. nigriloris* are either color phases or subspecies of *troglodytes* and of *astrild*. *E. rhodopyga* is certainly close to *E. troglodytes*, but too different to be united.

The Australian *E. temporalis* is a typical waxbill in every way, intermediate on many sides between *E. troglodytes* and *E. melpoda*.

The western *E. melpoda* is undoubtedly conspecific with the eastern *E. paludicola*, which only differs in the absence of orange on the face, and in an increase in the pink on the abdomen, a variation in degree of pigmentation similar to that of the races of *E. melanotis*, which may or may not possess a black face and throat in the male. *E. roseicrissa* is also a subspecies of *melpoda*.

E. atricapilla and *E. nonnula*, superficially similar, coexist over a large territory and constitute two separate species.

E. melanotis is very close to them, having only a shorter tail. In *E. quartinea*, both sexes have no black on the head and are similar to the female of *melanotis*, of which it is a subspecies.

E. shelleyi is a peculiar short-tailed species, gray, black and olive-yellow, found in mountain forests. I consider *E. ansorgei*

as a subspecies, notwithstanding its much thicker bill and slightly larger tail, as it is exactly alike in color pattern. Related to *shelleyi* is *E. capistrata*, a very distinct low-land bird, perhaps the most aberrant species of the whole group.

Subgenus **Amandava**.

Blyth, 1836. Type: *Fringilla amandava*.

Size small or very small.

Bill moderate and conical. Wing rather sharp; 2d to 5th primaries sub-equal. Tail rather short and rounded. Legs moderate; toes comparatively long and slender. Plumage variable: brown, olive, yellow, orange or red, with either coarse cross-barring on the sides and flanks, or white spots on the upperparts. Sexes different. Voice sweet.

Live in grass and bushes, in, or near marshes, paddy and sugar-cane fields.

24. *E. amandava*. Red Avadavat⁴. Ceylon, India, Burma, N. Tonkin, N. Siam, S. Yunnan, CochinChina, Cambodia, Java, Bali, Lombok, Flores, Sumba, Timor.

25. *E. formosa*. Green Avadavat. Central India.

26. *E. subflava*. Orange breasted Wax-

bill. Greater part of the Ethiopian region, from Senegal, east to Kenya and Abyssinia, south to Natal and Angola.

Subgenus **Ortygospiza**.

Sundevall, 1850. Type: + *Fringilla polyzona* = *E. atricollis polyzona*.

Size small or very small.

Wing formula as in species of the subgenus *Amandava*, to which they are very closely related, differing only in their decidedly thicker bill, stronger and longer legs, shorter tail, louder voice, and in their much more terrestrial habits.

Live on the ground, in veld, meadows and marshes, among the grass.

27. *E. locustella*. Locust Finch. Central Africa.

28. *E. atricollis*. Quail Finch. The greater part of the Ethiopian region, from Senegal to Erythrea and South Africa.

Note: All forms of *E. atricollis* have bars on the breast, sides and flanks. Females of *E. locustella* have bars on the sides, and resemble very much *E. subflava*. But the crimson and black males have no barring, just like *E. amandava*. Those of the nominal race (*locustella*) have white spots above like males of *E. amandava*, while males of *E. l. uelensis* have none.

⁴ See revision: J. Delacour, *L'Oiseau*, 1935, pp. 379-384.

B. THE GRASSFINCHES (ERYTHRURAE).⁵

X. GENUS **Zonaeginthus**.

Cabanis, 1851. Type: *Loxia bella*.

Size medium.

Bill moderate to long, conical; mandibles almost straight. Legs and toes moderate to strong. Wing moderately rounded, Tail rather short and rounded. Plumage brown above, rump and upper tail-coverts crimson. Sexes alike or nearly so.

Live in open country near the ground, in the brush.

Subgenus **Zonaeginthus**.

Size smaller.

Legs moderate. Wing sharper; primaries straight, rather stiff and narrow; 2d primary the longest and subequal with 3rd and 4th and 5th. Sides and flanks black; boldly spotted or striped with white.

1. *Z. pictus*. Painted Finch. Central and N. W. Australia.

2. *Z. oculatus*. Red-eared Fire-tail Finch. S. W. Australia.

3. *Z. bellus*. Fire-tail Finch. E. Australia and Tasmania.

4. *Z. guttatus*. Diamond Sparrow. E. Australia.

Subgenus **Oreospiza**.

DeVis, 1896. Type: *Oreospiza fuliginosa*.

Size larger.

Legs and toes long and strong. Wing well rounded; 2nd primary much shorter than 3rd, which in turn is much shorter than 4th and 5th. Primaries broad and soft, slightly pointed and curved outwards. Underparts brown freckled with crimson.

5. *Z. fuliginosus*. Crimson-bellied Mountain Finch. New Guinea, above 2,800 m.

Note: The connection between *Z. pictus* and the other species of this genus has been often overlooked, and too much stress has been laid on its long, thin bill, compared to the shorter, conical beaks of the others. This is merely a difference in degree, and they all have rather pointed bills. General proportions and color pattern are in fact quite consistent in the four species.

Although evidently related to the other four, *Z. fuliginosus* deserves subgeneric distinction on account of its special wing formula, very large feet and legs and peculiar coloration.

⁵ For interesting information on Australian grass finches, see N. W. Cayley: *Australian Finches in Bush and Aviary*, Sydney, 1932.

According to H. Sedley (in litt.), nestlings of *Z. pictus* have three spots, with two short lines below, on the palate.

XI. GENUS *Poephila*.

Gould, 1842. Type: *Amadina acuticauda*.

Size medium.

Bill rather thick, culmen slightly curved and swollen at the base. Wing moderately rounded; 1st primary minute; 2nd slightly or hardly shorter than 3rd; 4th and 5th long. Tail variable. Legs moderate, toes fairly long. Plumage extremely elaborate, varied and diversified. Sexes alike or different.

Live in open country dotted with trees, long grass and bushes.

Subgenus *Neochmia*.

Gray, 1849. Type: *Fringilla phaeton*.

Tail rounded or graduated, central rectrices never ending in a sharp point. Plumage pattern complicated and elaborate, with always a great deal of spotting or barring.

1. *P. phaeton*. Crimson Finch. N. Australia and S. New Guinea.

2. *P. ruficauda*. Red-tailed Finch. N. and E. Australia.

3. *P. guttata*. Zebra Finch. Australia, Timor and Flores.

4. *P. bichenovi*. Owl Finch. N. and E. Australia.

5. *P. modesta*. Cherry Finch. E. Australia.

Subgenus *Poephila*.

Tail rounded or graduated, the two central rectrices always ending in a rachial point, of variable length. Plumage pattern bold, made of large patches of different colors, without bars or spots. Always a black patch on the throat.

6. *P. cincta*. Parson Finch. E. Australia.

7. *P. acuticauda*. Shaft-tailed Finch. N. and N. W. Australia.

8. *P. personata*. Masked Finch. N. Australia.

9. *P. gouldiae*. Gouldian Finch. N. Australia.

Notes: This genus is extremely difficult to arrange, as many of the species included are highly specialized in color pattern and general proportions, and no intermediates exist between them. That is the reason why so many monotypic, and in my judgment utterly unnecessary genera, have been created for them.

Besides the coloration, the length and shape of the tail differ much. But the bill is fairly uniform. The wing formula varies a little, the 2d primary being clearly shorter

than the 3d in *P. phaeton*, slightly so in *P. acuticauda* and *P. personata*, and subequal to 3d, 4th and 5th in all the other species. But the general structure of the wing is the same, and variations are too slight to warrant even subgeneric distinction.

In the subgenus *Neochmia*, *P. evangelinae* is nothing but a subspecies of *P. phaeton*; there is no proof whatever of their overlapping on Cape York Peninsula.

P. castanotis from Australia, and *P. guttata* from Timor and Flores, are decidedly conspecific; *guttata* is the oldest name for the species.

P. modesta resembles superficially *Lonchura malabarica*, but I am convinced that there is no real close relationship between them. When we know the palate markings of this species, we shall be able to finally decide on this point.

In the nominal subgenus, *P. cincta* and *P. acuticauda* constitute a superspecies.

P. gouldiae has three color phases: black, red and yellow-headed, which bear no relation to geographical distribution. The so-called yellow-headed form is very rare and the color of its head is really a dull cinnabar orange.

The intermediate position of the genus is further emphasized by the palate markings of the nestlings of the different species. *P. phaeton* (Rand), *P. guttata*, *P. bichenovi*, *P. gouldiae* show distinct spots, while *P. cincta*, *P. acuticauda*, *P. personata* have short lines, but these are not horseshoe-like in shape (Neunzig).

XII. GENUS *Erythrura*.

Swainson, 1837. Type: *Loxia prasina*.

Size medium.

Bill strong, often long. Legs and feet strong. Wing rather sharp; 1st primary minute; 2d, 3d, 4th, 5th, subequal (2nd slightly shorter in *E. kleinschmidti*). General color grass green. Sexes alike or slightly different. Low metallic voice.

Live mostly in bamboo forests and groves.

Subgenus *Reichenowia*.

Poche, 1904. Type: *Chlorura hyperhythra*.

Bill black, moderate, pointed and compressed near tip. Tail rounded; rump and upper tail-coverts green. Sexes similar.

1. *E. hyperhythra*. Green-tailed Parrot-finch. Malay Peninsula, Sumatra, Borneo, Java, Lesser Sunda Islands, Philippines and Celebes (mountains).

Subgenus *Erythrura*.

Bill strong and black, compressed near the tip. Tail pointed and graduated, red as well as its upper coverts. Sexes similar or slightly different.

2. *E. viridifacies*. Manilla Parrot-finch. Luzon (Philippine Islands).

3. *E. prasina*. Pintail Nonpareil. N. Laos, Malay Peninsula, Sumatra, Java and Borneo.

4. *E. tricolor*. Tricolored Parrot-finch. Timor, South West Islands and Tenimber Islands.

5. *E. trichroa*. Blue-faced Parrot-finch. New Guinea, N. Australia (Cape York), Celebes, Moluccas, Bismarck Archipelago, Micronesia, Solomons, New Hebrides and Loyalty Islands.

6. *E. papuana*. Papuan Parrot-finch. New Guinea (mountains).

7. *E. psittacea*. Red-headed Parrot-finch. New Caledonia.

8. *E. cyanovirens*. Blue-bellied Parrot-finch. Samoa, Fiji and New Hebrides.

Subgenus **Ramphostruthus**.

Mayr, 1931. Type: *Amblynura kleinschmidti*.

Bill strong and long, creamy white, not compressed. Tail rounded, crimson. Wing more rounded; forehead velvety and bluish-black. Sexes similar.

9. *E. kleinschmidti*. Black-faced Parrot-finch. Viti Levu (Fiji).

Note: The parrot-finches form an isolated group, with no great affinities to other Estrildinae. The green upper parts of *P. gouldiae* do not seem to imply close relationship. It is probably an ancient, rather primitive genus, adapted to life among bamboos. But the domino palate pattern of young *E. psittacea*, figured by Sarasin (Die Vogel Neu-Caledonia, 1913), leaves no doubt as to their place among the grassfinches.

C. THE MANNIKINS (AMADINAE).

XIII. GENUS **Padda**.

Reichenbach, 1850. Type: *Loxia oryzivora*.

Size large.

Bill very large, both mandibles slightly convex. Legs strong, toes long and fleshy. Wing rather sharp; 1st primary minute; 2d, 3d, 4th and 5th subequal. Tail rounded, black. Plumage gray or brown; head and throat black, with large white cheek patches. Sexes similar.

Live in open and cultivated country.

1. *P. oryzivora*. Java Sparrow. Java and Bali (elsewhere, probably introduced).

2. *P. fuscata*. Timor Sparrow. Timor and Saman Island.

Note: According to Sushkin, the genus *Padda* is a well defined one because of its anatomical peculiarities. Its general appearance, life habits and color pattern are certainly in accord with this view.

XIV. GENUS **Amadina**.

Swainson, 1827. Type: *Loxia fasciata*.

Size large to medium.

Bill short and stout, swollen at base. Wing rather sharp; 1st primary minute; 2d, 3d, 4th and 5th subequal. Tail short and rounded. Legs moderate, toes slender. Plumage pale rufous brown, many feathers barred with black, or spotted; red on head or throat in males. Sexes different.

Live in dry open bushy country.

1. *A. fasciata*. Cut-throat Finch. West, Central and East Africa, south to N. Rhodesia.

2. *A. erythrocephala*. Red-headed Finch. South Africa north to Angola, S. Rhodesia and the Transvaal.

Note: In its color pattern, sexual differences and the dress of juveniles, *Amadina* is decidedly different from *Lonchura*. The large blotches on the nestlings' palate and tongue are also very peculiar.

XV. GENUS **Lonchura**.

Sykes, 1832. Type: *Fringilla nisoria* (subspecies of *punctulata*).

Size medium to small.

Bill stout, swollen at the base. Wing rather sharp; 1st primary minute, 2d, 3d, 4th and 5th subequal. Tail short or moderate. Legs rather short, toes long. Plumage varied, but without bright colors. Sexes similar or very nearly so.

Live in open country of bushes and tall grass, edges of forest and clearings, gardens and cultivated fields.

Subgenus **Heteromunia**.

Mathews, 1913. Type: *Amadina pectoralis*.

Size moderate.

Bill moderately long and thick, silver gray. Tail short and rounded; no ornamental decomposed fringes on rump or tail feathers. General color pale rufous brown and gray, with a large black patch on the cheeks and throat, small white spots on the wings and sides of body and a white band on the breast, made of the broad white tips of the feathers.

1. *L. pectoralis*. Pectoral Finch. Northern Australia.

Note: This species constitutes in many ways an intermediate between the grassfinches and the mannikins. It has the general aspect and shape of the latter, particularly those of the subgenus *Munia*,

but its elaborate spotting seems to be nearer to the pattern of the grassfinches of the subgenus *Neochmia*. Moreover, according to Cayley (*op. cit.*, p. 102), its display is very close to those of *P. phaeton* and of *P. ruficauda*. But the mouth markings of the nestlings are those of the mannikins, according to Mr. Henry Sedley, who writes from Los Angeles on June 1, 1943, as follows: "Two of the young pectoral finches, for some reason, have left the nest, much too soon. I caught one and examined it carefully. At the corners of its mouth it has a blue line extending along both upper and lower mandibles for possibly a sixteenth of an inch. The line on the roof of the mouth is unbroken and is in the horse-shoe shape." The systematic position of the pectoral finch is therefore evident, and it really belongs to the genus *Lonchura*. Its peculiarities, however, warrant its separation in a special subgenus.

Subgenus **Euodice**.

Reichenbach, 1862. Type: *Loxia cantans*.

Size medium.

Bill thick and short, silver gray. Head small for the genus. Tail comparatively long, black or purplish, rounded, the two central feathers elongated or not. General color pale rufous brown. No ornamental decomposed fringes on rump or tail feathers.

2. *L. malabarica*. Common Silver-bill. Tropical N. W., Central and N. E. Africa, S. Arabia, Persia, Afghanistan, Baluchistan, India and Ceylon.

3. *L. griseicapilla*. Gray-headed Silver-bill. (Nomen novum for *L. caniceps*, *Pytilia caniceps* Reichenow, 1879, preoccupied by *L. (Munia) caniceps* (Salvadori), 1876). S. Kenya, Uganda and Tanganyika.

Note: The African and Asiatic common silver-bills are undoubtedly conspecific. The gray-headed species is conspicuously different in the color of its head and in the shape of its almost square tail, but in habits and otherwise, it is very close to *malabarica*, which it replaces geographically.

The three above species are closer to the grassfinches than all other *Lonchura*, being more active, lighter in build, and having a shriller voice. The nestling has the continuous black palate mark of the mannikins in *Euodice* (Bates, *Ibis*, 1934, p. 705).

Subgenus **Lonchura**.

Size medium to small.

Bill stout, but variable in length, gray or black, dull red and black in *L. nana*. Tail rather short, rounded or pointed; upper tail-coverts little or not at all decomposed, sometimes bordered with yellow; rump often mottled gray and white, pure yellow in *tristissima* and *leucosticta*. Plumage

elaborate, marked, spotted or lined with black, white, gray or brown, exceptionally mainly brown or black.

4. *L. fringilloides*. Magpie Mannikin. The greater part of the Ethiopian region.

5. *L. bicolor*. Black-breasted Mannikin. The Ethiopian region south to Angola, the Belgian Congo and Natal.

6. *L. cucullata*. Bronze Mannikin. The greater part of the Ethiopian region.

7. *L. leucogastroides*. Javanese Mannikin. S. Sumatra, Java, Bali and Lombok.

8. *L. molucca*. Moluccan Mannikin. Flores, Sumba, Sumbawa, Kalao, Kalao-Tua, Celebes and Moluccas.

9. *L. fuscans*. Dusky Mannikin. Borneo, Banguey and Natuna Islands.

10. *L. striata*. Striated Mannikin. Ceylon, India, Burma, Siam, S. China, Indochina, Andaman and Nicobar Islands, Malay Peninsula, Sumatra.

11. *L. leucogastra*. White-breasted Mannikin. Malay Peninsula, Sumatra, Borneo, Philippines.

12. *L. kalaarti*. Jerdon's Mannikin. Ceylon and S. W. India.

13. *L. tristissima*. Yellow-rumped Mannikin. New Guinea.

14. *L. leucosticta*. White-spotted Mannikin. S. New Guinea.

15. *L. punctulata*. Nutmeg Mannikin. Ceylon, India, Burma, S. China, Siam, Indochina, Hainan, Formosa, Philippines, Malay Peninsula, Sumatra, Java, Bali, Lesser Sunda Islands, Celebes.

16. *L. nana*. Bib Finch. Madagascar and Mayotte Island.

Note: The species included in the subgenus *Lonchura* are certainly not so highly specialized as those of the subgenus *Munia*. But the two subgenera are so gradually linked together that generic separation is impossible. In the proportions of their beak or feet, in the ornamentation of their rump or tail feathers, the species *nana*, *leucogastra*, *kalaarti*, *tristissima*, *leucosticta* and *punctulata* provide a transition between the more generalized forms and the different species placed in the subgenus *Munia*.

L. bicolor, *L. nigriceps* and their races are conspecific.

The African species are primitive, but not more so than some of the Indo-Malayan ones, from which they cannot be separated subgenerically. Indeed *L. cucullata* is very similar to *L. leucogastroides* and *L. molucca* is also closely related.

The Malaysian *L. leucogastra* is entirely different, and conspecific with the Philipian *L. everetti*, both having the upperparts with pale rachial lines, and largely yellow rectrices.

L. jerdoni, from S. W. India, is obviously a subspecies of *L. kalaarti*, from Ceylon, differing only in its plain rufous, instead of mottled, abdomen; its upper tail-coverts are yellow.

L. tristissima, with its races *hypomelana* and *calaminoros*, are extremely close to *L. leucosticta*, all having a yellow rump. But both are found together on the Noord River, in southern New Guinea, a fact necessitating specific distinction.

L. nana, from Madagascar, is quite a distinct bird, approaching *Euodice* in general coloration, but its black throat, red and black bill and pink legs are peculiar; because of its habits and of its yellow upper tail-coverts, however, I believe that it is a member of the subgenus *Lonchura*.

In *L. punctulata*, which has numerous subspecies, variations in the mottling of the underparts and in the size and intensity of the yellow fringes to the tail feathers are considerable, but there is little gradual change connected with geographical distribution.

Subgenus **Munia**.

Hodgson, 1836. Type: *Loxia rubroniger* (= *L. ferruginosa atricapilla*).

Size medium.

Bill stout, silver gray. Head large. Body long. Toes very long. Tail short and pointed, with highly decomposed, ornamental and vividly colored fringes to rectrices and upper coverts, as also to the rump feathers. Upperparts chestnut, brown or black; underparts variable.

17. *L. quincolor*. Five-colored Mannikin. Lesser Sunda Islands, from Lombok to Alor, Sumba, Timor and South West Islands.

18. *L. ferruginosa*. Chestnut Mannikin. Ceylon, India, Burma, Siam, S. China, Formosa, Hainan, Indochina, Malay, Peninsula, Sumatra, Java, Bali, Borneo, Philippines, Lombok, Flores and Celebes.

19. *L. grandis*. Great-billed Mannikin. New Guinea.

20. *L. forbesi*. Forbes' Mannikin. New Ireland.

21. *L. spectabilis*. White-bellied Mannikin. New Guinea and New Britain.

22. *L. nigerrima*. Black Mannikin. New Hanover and N. New Ireland.

23. *L. nevermanni*. Nevermann's Mannikin. S. New Guinea.

24. *L. maja*. Pale-headed Mannikin. Malay Peninsula, Sumatra and neighboring islands, Java, Bali, Lombok, Flores, Celebes, New Guinea and N. Australia.

25. *L. castaneothorax*. Chestnut-breasted Mannikin. Australia and New Guinea.

26. *L. teerinki*. Teerink's Mannikin. Central New Guinea.

27. *L. stygia*. Stresemann's Mannikin. S. New Guinea.

28. *L. monticola*. Southern Mountain Mannikin. S. E. New Guinea, above 2,800 metres.

29. *L. montana*. Junge's Mountain Mannikin. Central New Guinea, at 4,000 metres.

30. *L. melaena*. Parrot-billed Mannikin. New Britain.

Note: The numerous forms of this very highly specialized subgenus can be divided into several well marked superspecies and species.

L. quincolor is quite distinct, but closely related to the next species.

The different forms, mostly chestnut and black, a few having some pure white on the head or on the underparts, but all with black chin, throat, upper breast and abdomen, and a moderate bill, can be referred to the species *ferruginosa*, the oldest name for the group, which includes *atricapilla*, *malacca*, *bruniceps* and *jagori*, and their races. *L. grandis*, with a much larger bill and more black underneath, forms a superspecies with *ferruginosa*.

Another superspecies is composed of *L. spectabilis* (and its subspecies *L. s. mayri*), *L. forbesi*, *L. nevermanni* and *L. nigerrima* (with its subspecies *L. n. hunsteini*).

L. maja includes as subspecies all the pale-headed forms: *pallida*, *subcastanea*, *vana*, *caniceps*, *kumisi*, *strachleyana* and *flaviprymna*, which only differ in degree and replace one another geographically. There are lowland and mountain forms among them.

All the remaining forms, with elaborately marked underparts and head, compose a large superspecies: *L. castaneothorax* and its races, *ramsayi* (new name for *nigricaps*), *sharpei* and *uropygialis*; *L. teerinki* and *L. stygia*, which are better considered separate species on account of their darker and simpler pattern, but are nevertheless representatives of *L. castaneothorax*; *L. monticola* and *L. montana*, highly specialized and closely connected mountain forms, but different enough in pattern, which I rather reluctantly retain as two distinct species; and, in the end, the huge-billed, curiously colored *L. melaena*.

The very peculiar case of several specimens of *M. m. flaviprymna* has been mentioned by D. Seth-Smith (*Avicultural Magazine*, New Series, Vol. V., 1907, pp. 195-198) and by G. Mathews (*The Birds of Australia*, vol. XII, p. 203). The birds, apparently imported and wild caught, showed in subsequent molts, after well over a year in captivity, dark markings on the throat, breast and sides of the body, suggesting a transition between *flaviprymna* and *castaneothorax*. Seth-Smith did not think probable

that they could have been hybrids, as it took, in his opinion, too long a time for the dark feathers to appear. He suggested that *flaviprymna* was but a pale desert form of *castaneothorax*, and that a more humid environment had caused the dark feathers to appear. It is a very doubtful possibility, since a wild shot female in the American Museum, Rothschild collection, no. 721,473, Victoria River, 30th June, 1902, shows a gray crown and a dark brown-spotted throat just like the birds mentioned above. The possibility of a hybridization remains. *L. flaviprymna* and *L. castaneothorax* are respectively very close to representatives of two distinct species: *ramsayi* (*nigriceps* auctorum) and *caniceps*, which are found living together in S. E. New Guinea; it seems therefore most unlikely that they can be conspecific. At present, I prefer to refer *flaviprymna* to the species *maja*. But it remains difficult to explain the changes in the plumage of the birds observed by Seth-Smith.

N. W. Cayley (*op. cit.*, pp. 84-90) discusses this question very carefully; he also believes in the specific distinction of *castaneothorax* and *flaviprymna*. On p. 92, he quotes Mr. A. Ashton-Hansen, of Sidney, who has observed that the display and song of *flaviprymna* are unlike those of *castaneothorax*, but exactly similar to those of *L. maja*, a very strong argument in favor of the specific unity of all the pale-headed mannikins.

NOMENCLATURAL NOTES.

As a result of the suppression of several untenable generic names and of the inclusion of several species in wider genera, a few nomenclatural changes have become necessary:

1. *Estrilda rufopicta nitidula* (*Lagonosticta nitidula* Hartlaub, 1886) is preoccupied by *Estrilda nitidula* Hartlaub, 1865, now included in the genus *Hypargos*. As pointed out by Wolters, *Orn. Monats.*, 1939, pp. 33-37, the next available name is *Estrilda rufopicta harterti* (*Hypargus harterti* Shelley, 1903).

2. *Estrilda jamesoni ansorgei* (*Lagonosticta rhodopareia ansorgei* Neumann, *Bull. B. O. C.*, XXI, p. 58, 1908) and *Estrilda atricollis ansorgei* (*Ortygospiza ansorgei* Og. Grant, *Bull. B. O. C.*, XXV, p. 84, 1910) are preoccupied by *Estrilda shelleyi ansorgei* (*Putelia ansorgei* Hartert, *Bull. B. O. C.*, X, p. 26, 1899). I propose for the first the new name *Estrilda jamesoni benguellensis* and for the second, *Estrilda atricollis gambiensis*.

3. *Estrilda ianthinogaster ugandae* (*Granatina i. ugandae*, Van Someren, *Bull. B. O. C.* XL, p. 53, 1919) is preoccupied by *Estrilda angolensis ugandae* (*Uraeginthus bengalus ugandae* Zedlitz, *Journal Orn.*,

LIX, p. 606, 1911); I propose for it the new name *Estrilda ianthinogaster somereni*, if the subspecies is valid, which I am not now in a position to ascertain.

4. *Estrilda astrild nyanzae* Neumann, *Journal Orn.*, 1907, p. 596, is preoccupied by *Estrilda melanotis nyanzae* (*Neisna du-fresneyi nyanzae* Neumann, *Journal Orn.*, 1905, p. 350). The name *Estrilda astrild munzneri* Kothe, 1911, is available for this subspecies.

5. *Lonchura ferruginosa orientalis* (*Munia malacca orientalis* Stuart Baker, *Bull. B. O. C.*, XLV, 1925, p. 58) is preoccupied by *Lonchura cantans orientalis* (*Aidemosyne orientalis* von Lorenz and Hellmayr, *Orn. Monats.*, IX, p. 39, 1901). I propose for it the new name *Lonchura ferruginosa bakeri*.

6. *Lonchura caniceps* (*Pytilia caniceps* Reichenow, *Orn. Centrall.*, IV, p. 139, 1879) is preoccupied by *Lonchura maja caniceps* (*Munia caniceps*, Salvadori, *Ann. Mus. Civ. Genoa*, IX, p. 38, 1876). I propose for it the new name *Lonchura griseicapilla*.

7. *Lonchura castaneothorax nigriceps* (*Donacola nigriceps* Ramsay, *Proc. Linn. Soc. N.S.W.I.*, p. 392, 1877) is preoccupied by *Lonchura bicolor nigriceps* (*Spermestes nigriceps* Cassin, *Proc. Acad. Nat. Sci. Philadelphia*, 1852, p. 185). I propose for it the new name *Lonchura castaneothorax ramsayi*.

ALPHABETICAL LIST OF GENERIC NAMES.

In **bold face**, valid genera; in **SMALL CAPITALS**, subgenera; in *italics*, synonyms. *Acalanthe* Reichenbach, 1862. (*E. psittacea*) = *Erythrura*.

Aegintha Cabanis, 1851. (*E. temporalis*) = *Estrilda*.

Aethiops Strickland, 1841. (*N. canicapilla*) = *Nigrita*.

Aidemosyne Reichenbach, 1862. (*P. modesta*) = *Poephila*.

Alisteranus Mathews, 1912. (*P. cincta*) = *Poephila*.

Amadina Swainson, 1827. (*A. fasciata*).

AMANDAVA Blyth, 1836. (*E. amandava*). Subgenus of *Estrilda*.

Amaurestes Reichenbach, 1862. (*L. fringilloides*) = *Lonchura*.

Amblymura Reichenbach, 1862. (*E. cyanovirens peali*) = *Erythrura*.

Atopornis Reichenow and Neumann, 1895. (*N. c. diabolica*) = *Nigrita*.

Bathilda Reichenbach, 1862. (*P. ruficauda*) = *Poephila*.

Bichenoa Moulton, 1923. (*P. bichenovi*) = *Poephila*.

Brunhilda Reichenbach, 1863. (*E. erythronotos*) = *Estrilda*.

Cayleya Iredale, 1929. (*Z. pictus*) = *Zonaeginthus*.
Chloebea Reichenbach, 1862. (*P. gouldiae*) = *Poephila*.
Chlorestrida Shelley, 1905. (*E. shelleyi an-sorgei*) = *Estrilda*.
Chloromunia Mathews, 1923. (*E. trichroa macgillivrayi* = *sigillifera*) = *Erythrura*.
Chlorura Reichenbach, 1862. (*E. hyperhy-thra*) = *Erythrura*.
Clytospiza Shelley, 1890. (*C. monteiri*).
Coccopygia Cabanis, 1861. (*E. melanotis*) = *Estrilda*.
Cryptospiza Salvadori, 1884. (*C. reichen-owi*).
Dermophrys Hodgson, 1841. (*L. ferruginosa atricapilla*) = *Lonchura*.
Donacola Gould, 1842. (*L. castaneothorax*) = *Lonchura*.
Emblema Gould, 1842. (*Z. pictus*) = *Zonaeginthus*.⁶
Erythrura Blyth, 1852. (*E. prasina*) = *Erythrura*.
Erythrura Swainson, 1837. (*E. prasina*).
Estrilda Swainson, 1827. (*E. astrild*).
EUODICE Reichenbach, 1862. (*L. cantans*). Subgenus of *Lonchura*.
Glaucestrilda A. Roberts, 1922. (*E. coerulescens*) = *Estrilda*.
Gouldaeornis Mathews, 1923. (*P. gouldiae*) = *Poephila*.
Granatina Bonaparte, 1850. (*E. granatina*) = *Estrilda*.
Habropyga Cabanis, 1827. (*E. astrild*) = *Estrilda*.
Haplopyga Heuglin, 1873. (*E. astrild*) = *Estrilda*.
HETEROMUNIA Mathews, 1913. (*L. pectoralis*). Subgenus of *Lonchura*.
Hypargos Reichenbach, 1862. (*H. margaritatus*).
LAGONOSTICTA Cabanis, 1851. (*E. rubricata*). Subgenus of *Estrilda*.
Lepidopyga Reichenbach, 1862. (*L. nana*) = *Lonchura*.
Lichnidospiza Heuglin, 1871. (*E. rara*) = *Estrilda*.
Lobiospiza Hartlaub and Finsch, 1870. (*E. notabilis* = *cyanovirens*) = *Erythrura*.
Lobospingus De Vis, 1897. (*E. trichroa sigillifera*) = *Erythrura*.
Lonchura Sykes, 1832. (*L. punctulata*).
Maja Bonaparte, 1850. (*L. maja*) = *Lonchura*.
MANDINGOA Hartert, 1919. (*H. nitidulus*). Subgenus of *Hypargos*.

Mariposa Reichenbach, 1863. (*E. angolensis bengala*) = *Estrilda*.
Marquetia Reichenbach, 1863. (*P. melba*) = *Pytilia*.
Melpoda Reichenbach, 1863. (*E. melpoda*) = *Estrilda*.
Mormolycea Reichenbach, 1863. (*E. larvata*) = *Estrilda*.
MUNIA Hodgson, 1836. (*L. ferruginosa atricapilla*). Subgenus of *Lonchura*.
Neisna Bonaparte, 1850. (*E. subflava*) = *Estrilda*.
NEOCHMIA Gray, 1849. (*P. phaeton*). Subgenus of *Poephila*.
Neopoephila Mathews, 1913. (*P. personata*) = *Poephila*.
Nesocharis Alexander, 1903. (*E. shelleyi*) = *Estrilda*.
Nigrita Strickland, 1841. (*N. canicapilla*).
Odontospiza Oberholser, 1905. (*L. griseicapilla*) = *Lonchura*.
Oreospiza De Vis, 1897. (*Z. fuliginosus*) = *Zonaeginthus*.
OREOSTRUTHUS De Vis, 1898. (*Z. fuliginosus*). Subgenus of *Zonaeginthus*.
ORTYGOSPIZA Sundevall, 1850. (*E. atricollis polyzona*). Subgenus of *Estrilda*.
Oryzornis Cabanis, 1851. (*P. oryzivora*) = *Padda*.
Oxyerca Gray, 1842. (*L. punctulata*) = *Lonchura*.
Padda Reichenbach, 1850. (*P. oryzivora*).
Paludipasser Neave, 1909. (*E. locustella*) = *Estrilda*.
Parmoptila Cassin, 1859. (*P. woodhousei*).
Percnopsis Heine, 1860. (*N. fusconota*) = *Nigrita*.
Pirenestes Swainson, 1837. (*P. sanguineus*).
Poephila Gould, 1842. (*P. acuticauda*).
Pytilia Swainson, 1837. (*P. phoenicoptera*).
RAMPHOSTRUTHUS Mayr, 1931. (*E. kleinschmidti*). Subgenus of *Erythrura*.
REICHENOWIA Poche, 1904. (*E. hyperhy-thra*). Subgenus of *Erythrura*.
Rhodopyga Heuglin, 1868. (*E. senegala brunneiceps*) = *Estrilda*.
Spermestes Swainson, 1837. (*L. cucullata*) = *Lonchura*.
Spermophaga Swainson, 1837. (*S. haematina*).
Spermospiza Gray, 1840. (*S. haematina*) = *Spermophaga*.
Sporaeginthus Cabanis, 1850. (*E. subflava*) = *Estrilda*.
Sporathastes Cabanis, 1847. (*A. fasciata*) = *Amadina*.
Steganopleura Bonaparte, 1850. (*P. bichenovi*) = *Poephila*.

⁶ *Emblema* Gould, 1842, is invalidated by *Amblema* Rafinesque altered to *Emblema* by Deshayes, 1840 (Dict. d' H. N., vol. 1, p. 334).

Stictoptera Reichenbach, 1862. (*P. bichenovi*) = *Poephila*.

Stictospiza Sharpe, 1890. (*E. formosa*) = *Estrilda*.

Stizoptera Oberholser, 1899. (*P. bichenovi*) = *Poephila*.

Taeniopygia Reichenbach, 1862. (*P. guttata castanotis*) = *Poephila*.

Tavistocka Mathews, 1919. (*Z. guttatus*) = *Zonaeginthus*.

Trichogramaptila Reichenbach, 1862. (*L. striata*) = *Lonchura*.

Trichroa Reichenbach, 1862. (*E. trichroa*) = *Erythrura*.

Uraeginthus Cabanis, 1851. (*E. angolensis bengala*) = *Estrilda*.

Uroloncha Cabanis, 1851. (*L. punctulata*) = *Lonchura*.

Zonaeginthus Cabanis, 1851. (*Z. bellus*).

Zonogastris Cabanis, 1851. (*P. phoenicoptera*) = *Pytilia*.



Delacour, Jean. 1943. "A revision of the subfamily Estrildinae of the family Ploceidae." *Zoologica : scientific contributions of the New York Zoological Society* 28(11), 69–86. <https://doi.org/10.5962/p.184665>.

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