

Summary and Conclusions.

1. The method of skull pneumatisation in a number of different species is examined.
2. Certain differences are demonstrated between three pigeon of the Genus *Columba* and two of the Genus *Streptopelia*, the Starling, the House Sparrow and the *Corvidae*.
3. Two groups of closely related species have been studied and although the two groups differ, the species within those groups pneumatise by the same method. (Wood Pigeon, Stock and Rock Dove: Carrion Crow, Rook, Jackdaw, Magpie and Jay.)
4. The method of skull pneumatisation in those species in which it reaches completion, seems likely therefore to provide evidence of systematic relationship.

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The South African races of the Red-billed Firefinch *Lagonosticta senegala* (Linnaeus)

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Sclater (1930), Vincent (1952) and McLachlan and Liversidge (1957) admit two geographical races of *L. senegala* from within the limits of sub-continental South Africa (*L. s. rendalli* Hartert, 1898: Upper Shiré R., southern Nyasaland, and *L. s. pallidicrissa* Zedlitz, 1910: Humpata, Huila, southern Angola), while Roberts (1940) lists only one. Study of 180 skins from southern Africa kindly placed at my disposal by the Directors of the East London Museum, the Transvaal Museum (through

Mr. O. P. M. Prozesky), the National Museum of Southern Rhodesia (through Mr. M. P. Stuart Irwin) and the Chicago Natural History Museum (through Mr. Melvin Traylor), reveals the variation in the South African populations to be relatively slight, though sufficient to permit of the recognition of two races.

L. s. pallidicrissa differs only moderately well from *L. s. rendalli*. The adult male of the former race has the red of the sides of the head, throat and breast rather duller and paler (about Old Rose or Old Rose/Light Jasper Red (*vide* Ridgway (1912), pl. xiii) as against Jasper Red (same pl.) in *L. s. rendalli*), while the lower breast, upper abdomen and flanks are a little less buffish and more extensively washed with rose than in *L. s. rendalli*. The upper-parts are also rather paler, less washed with Brownish Olive (pl. xxx), than in *L. s. rendalli*. The differences shown by the females of the two races are not particularly well-marked, but *L. s. pallidicrissa* is generally paler above, and lighter below, the throat and breast rather greyer, less buff, and the lower breast, abdomen and under tail-coverts tend to be whiter. There is no size difference between the two taxa.

L. s. pallidicrissa is now found to have a much more extensive range than formerly believed, and many of the southern African populations classified under the name *L. s. rendalli* by workers must now be transferred to the former race. The nomenclature and ranges of the two races of the Red-billed Firefinch dealt with in this report are as follows:

(a) *Lagonosticta senegala rendalli* Hartert

Lagonosticta senegala rendalli Hartert, *Novitates Zoologicae*, vol. v, 1898: Upper Shiré River, southern Nyasaland.

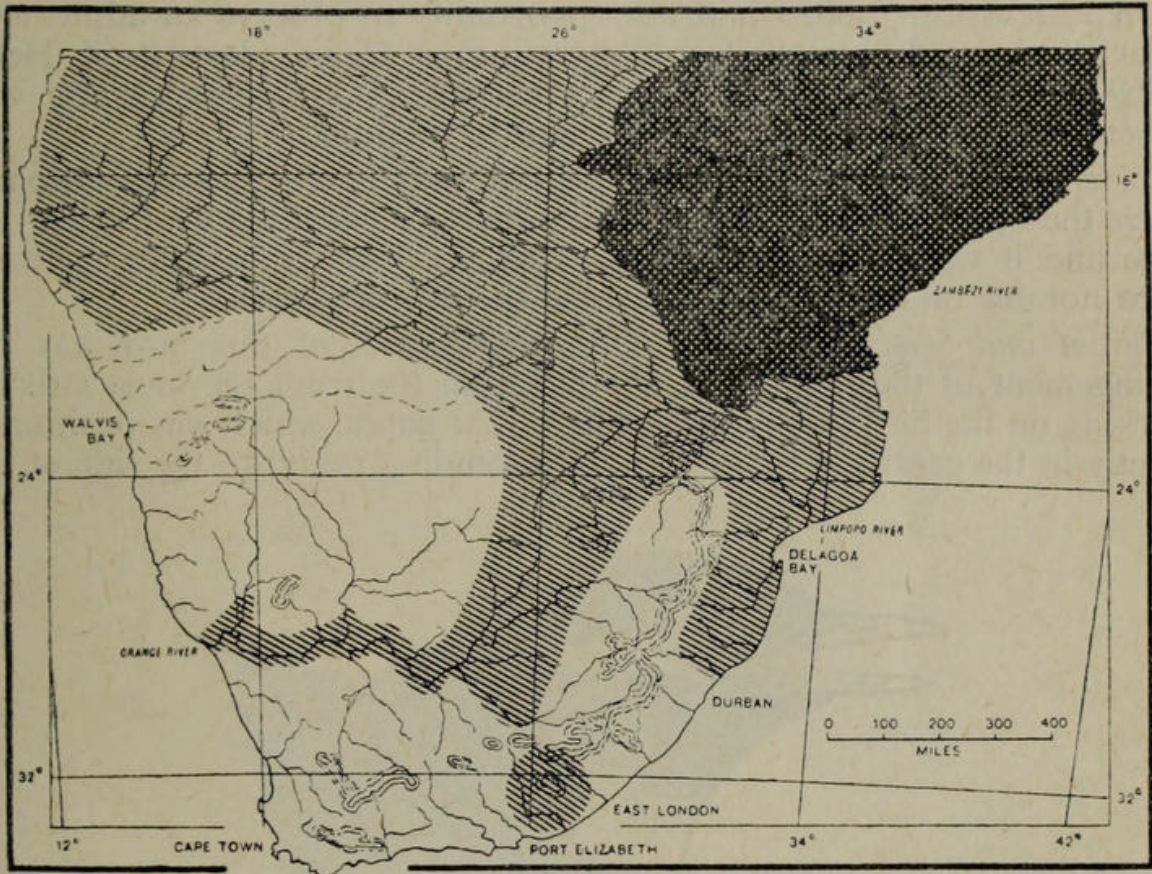
Ranges from southern Tanganyika Territory (specimens from Luwipa R.), northern Portuguese East Africa, southern Nyasaland, and eastern and south-eastern Northern Rhodesia (mainly in Luangwa R. valley), southwards to central and eastern Southern Rhodesia and southern Portuguese East Africa to the north of Sul do Save. Intergrades with *L. s. ruberrima* Reichenow, 1903: Bukoba, L. Victoria, over a wide area in north-eastern Northern Rhodesia, and doubtless in parts of Tanganyika Territory, and with *L. s. pallidicrissa* in west-central Northern Rhodesia, western Southern Rhodesia, and along the southern periphery of its range. The status of this form in the southern parts of the Belgian Congo is in doubt (see Chapin (1954)). There is some indication of local movement in firefinch populations, and such specimens of *L. s. rendalli* as have been obtained in the Congo (which is within the breeding range of *L. s. ruberrima*) may have been visitors from further to the south-east. I have before me a single male of *L. s. rendalli* from 4 miles N.W. of Molepolole, eastern Bechuanaland Protectorate, *ex* the collection of the National Museum of Southern Rhodesia, taken on 10th May, 1958 (N.M. No. 36422). Molepolole is in the central portion of the south-eastern sector of the range of *L. s. pallidicrissa*, and the specimen concerned is clearly a migrant from elsewhere.

(b) *Lagonosticta senegala pallidicrissa* Zedlitz,

Lagonosticta senegala pallidicrissa Zedlitz, *Ornithologische Monatsberichte*, vol. xviii, 1910, p. 173: Humpata, Huila, southern Angola.

Ranges from southern and south-western Angola, western Northern Rhodesia (including Barotseland), and adjacent northern South-West

Africa (Kaokoveld, Ovamboland, northern Damaraland and the Caprivi Strip), southwards through northern and eastern Bechuanaland and western Matabeleland, Southern Rhodesia, to the northern and north-western Cape Province (mainly Vaal R. and Orange R. valleys), Orange Free State, Transvaal, parts of the eastern Cape Province, Natal (local Zululand, Swaziland, and Sul do Save, southern Portuguese Eastern Africa.



Sketch-map showing the approximate ranges of the two geographical races of the Red-billed Firefinch *Lagonosticta senegala* (Linnaeus) occurring in southern Africa.

Spotted area—*Lagonosticta senegala rendalli* Hartert

Shaded area—*Lagonosticta senegala pallidicrissa* Zedlitz

Note: Of the topotypical population of *L. s. pallidicrissa*, I have before me a sample of 3♂♂, 2♀♀ collected by Gerd Heinrich in 1954, mainly at Huila. These agree perfectly with specimens from localities as far removed as Prieska, on the central Orange R., Glen, near Bloemfontein, in the western Orange Free State, and Newington, eastern Transvaal "lowveld".

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