

Mountain Chickadee	Black-capped Chickadee
Chestnut-backed Chickadee	Tufted Titmouse
Pygmy Nuthatch	White-breasted Nuthatch
White-breasted Nuthatch	Brown Creeper
Red-breasted Nuthatch	
Downy Woodpecker	Horned Lark
White-headed Woodpecker	Lapland Longspur
Brown Creeper	Tree Sparrow
	Snow Bunting
Hudsonian Chickadee	
Black-capped Chickadee	Red-winged Blackbird
White-breasted Nuthatch	Cowbird
Downy Woodpecker	Grackle
Brown Creeper	Starling
Red-winged Blackbird	Slate-colored Junco
Brewer's Blackbird	Tree Sparrow
Cowbird	
Red Crossbill	Bohemian Waxwing
White-winged Crossbill	Cedar Waxwing

State College of Washington
Pullman, Washington

THE RACES OF THE SCARLET MINIVET
[*PERICROCOTUS FLAMMEUS* (FORSTER)]¹

BY H. G. DEIGNAN

THE most recent relatively complete treatments of the races of the Scarlet Minivet have been those of Stresemann (*Mitteil. Zoolog. Mus. Berlin*, 15: 637-639, 1930), Ticehurst (*Jour. Bombay Nat. Hist. Soc.*, 34: 906-907, 1931), and Whistler and Kinnear (*Ibid.*, 36: 340-341, 1933). To account for the phenomena of variation exhibited by this species, particularly in the Indo-Chinese Subregion, not one of these is satisfactory; indeed, so insufficient was the material from critical areas available at that period to revisers that they could scarcely fail to be led into error. Since the present writer has been able to add to the series in the United States National Museum all the material deposited in the American Museum of Natural History, the Academy of Natural Sciences of Philadelphia, and the Museum of Comparative Zoölogy, to make a grand total of 408 specimens (with the majority from just the regions most poorly represented in the

¹ Published by permission of the Secretary of the Smithsonian Institution.

series possessed by his predecessors), it is felt that no apology is required for a new and more ambitious study of the species.

In addition to a wealth of skins, I have had the full use of notes contributed by Ernst Mayr, R. M. de Schauensee, and James C. Greenway, Jr., each of whom has at some time considered making a similar study and has now turned over to me his information. To these gentlemen and the institutions they represent, my thanks are gratefully tendered. Finally, I am deeply obligated to my friend Herbert Friedmann for advice generously given during the course of the work.

Whistler and Kinnear (*tom. cit.*: 341) have stated: "We do not consider that the Scarlet Minivet is racially connected with the Orange Minivet (*Pericocotus flammeus*). A marked characteristic of the Minivets as a whole is that racial variation has less effect on their bright colours than other details of their make-up and in the *speciosus* group the stability of the scarlet tint is very remarkable, and goes side by side with a close intergrading of the racial characteristic. There is moreover no trace of intergradation between *flammeus* and *speciosus*."

These remarks are a fair example of the taxonomic pitfalls into which one who adopts a geographically limited viewpoint may be led. With the exception of "*fraterculus*" (Hainan), no race from beyond the confines of the Indian Empire was discussed by the authors, despite the fact that both genus and species show their greatest diversity of forms in countries to the south and east of India. In the Sundas and the Philippines occur birds not specifically separable from either *flammeus* or *speciosus* by any criteria acceptable to the modern student, yet in which the plumage of adult males ranges in color through various oranges to pure yellow.

As for the absence of intergradation between *flammeus* and *speciosus*, it must be remembered that *flammeus* scarcely occurs on the eastern side of India north of Madras, while *semiruber*, the nearest race of *speciosus*-type, is not known south of Vizagapatam; the non-existence of intergradient individuals is therefore of no more consequence here than in the cases of numerous pairs of isolated races generally treated as conspecific.

For these reasons, I have no choice but to follow Stresemann (*tom. cit.*: 638-639) in employing the name *flammeus* Forster, 1781, for the entire group.

The important characters for subspecific division of this minivet are, in various combinations: (a) size, (b) the number of primaries in each sex that lack a spot of color near the center of the outer web,

(c) the ratio of the extent of color to that of black in the central rectrices of the adult male, and (d) the general coloration.

(a) Size in the races of the Scarlet Minivet, as shown by length of wing, varies clinally from north to south and east, while the peripheral populations to northwest and northeast are largest, and those of the southeastern islands are smallest. This seems to reflect simply the operation of Bergmann's Rule. (So large a percentage of my specimens have the longest rectrices worn or otherwise damaged that I find it inadvisable to present their measurements.)

(b) Taking the genus as a whole, but excepting the present species, we find that in either sex the number of unmarked primaries is four or more. The populations of *flammeus* vary between those in which the number unmarked is four in either sex, and those in which a majority of the adult males have two, the adult females three unmarked.

That the process leading to reduction of the number of unmarked primaries is not yet completed is indicated by the fact that all those populations with a lesser number unmarked exhibit more or less individual variation in this character; even in the population of northern Siam, in which appears extreme development in this direction, 95-% of the adult males have two unmarked, 5+-% three, and 13+-% of the females have two unmarked, 87-% three.

(c) The populations of *flammeus* vary between those in which the central rectrices of the adult male are wholly or predominantly black, and those in which (ordinarily) one-third or more of the surface of each is colored. The latter extreme appears in the males of every known population within a vast area, bounded to the north by an imaginary southeastward-slanting line drawn from the Chin Hills of west-central Burma across Siam to central Annam, and extending south to (and including) the great islands of Sumatra and Borneo. With this group must be placed also the Indian *semiruber*, a form restricted to the northern Eastern Ghats and still but slightly differentiated from the bird of west-central Burma, although now separated from it by the Gangetic alluvial plain, here 300 miles in breadth.

(d) Although the pattern in either sex is very constant throughout the species, the coloration of the adult male is a combination of glossy blue-black with either yellow, orange, or scarlet, while the adult female, with the exception of a single population, combines black, grays, and yellows.

Taking the population of northern Siam as typical of the most highly colored group, we find that the usual adult male, in his ontogeny, has passed through the following plumages:

- (1) a whitish-barred gray juvenal dress;
- (2) a black, gray, and yellow first-winter dress, separable from that of the adult female mainly by a slight orange suffusion on front, throat, and breast;
- (3) a first-nuptial dress, similar to the plumage of the adult female, but with yellow replaced by orange (a small minority of examples molt directly from the juvenal to the first-nuptial dress, thus omitting stage 2);
- (4) the scarlet and black livery of the old adult.

Viewing the species as a whole, the coloration of the adult female is nearest that of the first-winter dress of the male described above. On the Asiatic mainland, outside of the Malay Peninsula, there occurs hardly more than individual variation (within much the same limits) anywhere except in southeastern China. From the Malay Peninsula southward and eastward (excepting Java and Lombok), the gray portions of the plumage gradually darken, then assume a steely sheen, until, in *marchesae* of the Sulu Archipelago, the adult female (in most, not all cases) has these parts as highly glossed a blue-black as the adult male. Since the tendency to melanism appears from west to east in a band separating the gray-mantled races of Java and Lombok from the gray-mantled forms of the mainland and affects members of two different subspecies-aggregates, it would seem to result wholly from environmental factors.

To judge from recapitulation as shown by the northern Siamese male, the common ancestor of the species was once an orange bird, and still earlier a yellow. Accordingly, the present-day orange races would seem, by coloration, to stand nearer the primitive stock than the scarlet forms. That this may be considered the case is indicated by the fact that the orange *flammeus* of South India and the orange *siebersi* of Java possess such other relatively primitive characters as the four unmarked primaries in either sex and the absence of color from the central rectrices of the adult male.

But while there is good reason to believe that *flammeus* and *siebersi* have advanced little, if at all, beyond an orange ancestor, it would be untenable to argue that the forms of the islands farther east, in which the males range in color between pure yellow and orange, represent still earlier stages of development.

That the one race with a pure yellow male (*marchesae*) can in no sense be considered primitive, is indicated by the circumstance that its female has advanced beyond the ancestral type farther than that of any other population (although carrying one more step the

trend shown by females of neighboring Philippine forms). Moreover, this well-defined race, restricted to a tiny island at the southeastern extremity of the specific range, can have arrived there only at a comparatively recent period from some other of the Philippine islands (probably Mindanao), all of which are still inhabited by birds in which the red lipochrome is still present in more or less abundance. If further proof be needed of the very late development of the Sulu form, it is afforded by the discovery that one out of three adult females before me is in a livery, not like that of the Sulu male, but quite like that of the Mindanao female.

In brief, while one can at present only guess at the genetic factors involved, it seems probable that the males in all the populations of the southeasternmost islands illustrate the phenomenon of reversion.

If the orange and yellow populations are held to stand nearer an ancestral type of plumage, it follows that the scarlet forms, with their greater amount of red lipochrome and the invasion of the outer remiges and central rectrices by erythrism, must be considered the ones farthest advanced from the primitive stock. It is interesting to note that, in the highly erythristic population of northern Siam, isolated scarlet feathers not very infrequently appear among the black of throat, crown, mantle, or upper wing-coverts; it might be surmised that the tendency that has already so strikingly reduced the amount of black in the rectrices will eventually bring about similar diminution of yet other black areas.

The Indo-Chinese countries, lying at the center of present-day distribution, would seem to be the original home of the genus *Pericrocotus*. Within this area has developed the greatest variety of forms. Of the ten or eleven species currently recognized, seven (in one or more subspecies) occur practically throughout Burma, non-peninsular Siam, and Indochina, while an eighth (the only species of Indian origin and one restricted to regions of low precipitation) is represented by an endemic race in the dry zone of Burma.

Since *P. flammeus* is the only minivet of which the specific range is almost coincident with that of the genus, is the only one with even half as many well-defined races, and is, in whatever country it is found, usually the minivet seen in greatest numbers, it might be supposed that it has existed as a specific entity for a longer period than any other of the *Pericrocoti*. Moreover, as in the case of the genus as a whole, one might assume from its modern distribution that the ancestral stock arose in Indo-China.

It is, then, very surprising to find that the populations now resi-

dent at the heart of the presumptive homeland, in a continental territory with a huge expanse of more or less similar territory on every side, should seem by every character to be the ones farthest advanced from the ancestral stock, while most of the populations restricted to comparatively small, isolated, peripheral ranges should not only show no morphological change, but even retain plumages best described as primitive or reversionary!

To sum up the views set forth above, the eighteen recognizable subspecies of the Scarlet Minivet may be ranged (within the limitations imposed by linear representation) from the least to the most "advanced" as follows:

A. PRIMITIVE AGGREGATE

- I. *flammeus*.
- II. *siebersi, exul*.

B. REVERSIONARY AGGREGATE

- I. *leytensis, novus, johnstoniae, marchesae*.

C. ERYTHISTIC AGGREGATE

- I. *andamanensis, speciosus, fohkiensis, elegans, minythemelas, modiglianii, xanthogaster, insulanus* (subspecies nova), *flammiifer, suchitrae* (subspecies nova), *semiruber*.

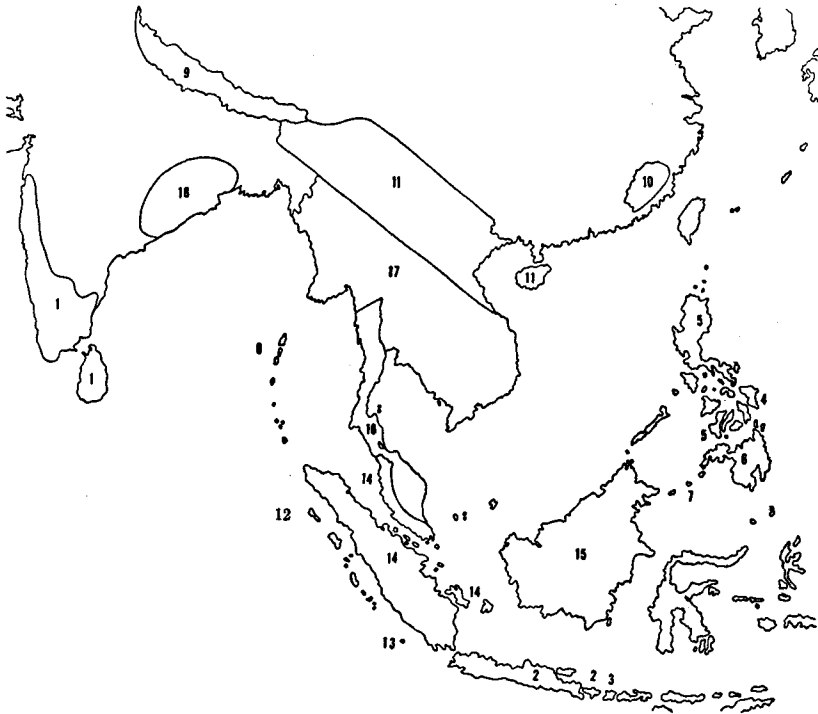
But before going on to a critical discussion of the races, these observations and reservations must be made:

Among the somewhat unstable Indo-Chinese birds is found, as suggested above, an unusual incidence of individual variation in the characters of remiges and rectrices, so that subspecific reference of a given population may be based in large part on such an intangible factor as the ratio of frequencies of occurrence (or absence) of the characters in question. A further complication is brought in by the not uncommon incidence of bilateral asymmetry.

Except in the case of the population of South Annam, where asymmetry is of too frequent occurrence to be passed over without special notice, I have treated an individual with a given remex in one wing marked, in the other plain, or with one central rectrix edged with color and the other plain, as if both of the remiges or rectrices possessed color.

There is ground for belief that in so plastic a species no given character connected with the remiges or rectrices will necessarily hold in every member of any population! Although I have indicated below numerous cases in which such a character appeared in 100%

of the birds *examined*, this high percentage of frequency is possibly attributable in each case to the relatively small sample available from the area in question. If with longer series the characters still obtain in 75% of the population, we need ask no more.



TEXT-FIGURE 1.—Map showing approximate breeding ranges of races of *Pericrocotus flammeus*: (1) *flammeus*; (2) *siebersi*; (3) *exul*; (4) *leytensis*; (5) *novus*; (6) *johnstoniae*; (7) *marchesae*; (8) *andamanensis*; (9) *speciosus*; (10) *fohkiensis*; (11) *elegans*; (12) *minyithomelas*; (13) *modiglianii*; (14) *xanthogaster*; (15) *insulanus*; (16) *flammifer*; (17) *suchitrae*; (18) *semiruber*.

Because of the wide range of variation that must be allowed within each of many of the subspecies, it follows that exceptional specimens (conceivably up to 25% of some populations) may fit, by every outward particular, the requirements for membership in some geographically remote race, although truly autochthonous where found. For this reason it cannot be impressed too firmly upon collectors that they should endeavor to secure a fair sample of the population of any critical area.

A. PRIMITIVE AGGREGATE

I

1. *Pericrocotus flammeus flammeus* (Forster)

Muscicapa flammea Forster, Indische Zoologie [Zoologica indica]: 25-26, pl. 15, 1781 (no locality given = Ceylon; cf. Whistler and Kinnear, Jour. Bombay Nat. Hist. Soc., 36: 341, footnote, 1933).

The adult male has the entire head, throat, neck, upper wing-coverts, scapulars, and upper half of the back glossy blue-black; the lower back, rump, and upper tail-coverts bright flame scarlet; the central rectrices black, the remaining pairs with an orange-chrome tip increasingly extensive outwardly until the outer pairs are more than half of this color; the primaries black, all but the first with an inwardly increasingly extensive apricot-yellow spot on the inner web, and all but the first four with a similar salmon-orange spot on the outer web; the secondaries like the inner primaries, but the outer ones also with a conspicuous, elongate salmon-orange spot along the outer web near the tip; the tibial plumes dark gray; the remaining under parts bright orange chrome, redder anteriorly.

The adult female has the lores gray: the front, fore crown, and a short supercilium bright lemon yellow, changing to olive-washed gray on the posterior crown, nape, upper wing-coverts, scapulars, and upper half of the back; the lower back, rump, and upper tail-coverts bright lemon chrome, often tinged with olivaceous; the remiges and rectrices as in the male, but with bright lemon chrome in place of salmon orange or orange chrome; the tibial plumes dark gray; the remaining under parts bright lemon yellow.

Subspecific summary:

- (a) Wing length: 86-95 mm. (♂♂); 85-88 mm. (♀♀).
- (b) Adult ♂ with first 4 primaries unmarked (100%);
adult ♀ with first 4 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ black (100%).

Specimens examined: 8 ♂♂, 4 ♀♀.

Range: Ceylon; South India, from Cape Comorin north to Khandala on the west, to Chittur on the east.

Remarks: This minivet seems to have appeared only recently on the eastern side of southern India and is perhaps extending its range northward in the Eastern Ghats.

II

2. *Pericrocotus flammeus siebersi* Rensch

Pericrocotus speciosus siebersi Rensch, Orn. Monatsb., 36: 47, 1928 (Mount Gedeh, West Java).

The adult male, in series, has the under parts less intense an orange chrome than the male of *flammeus*, but *siebersi* is distinguishable chiefly by its lesser size and by having the tibial plumes orange chrome mixed with gray.

The adult female is separable from that of *flammeus* by its lesser size; by having the lower back, rump, and upper tail-coverts olive green instead of olivaceous lemon chrome; by having the tibial plumes lemon yellow instead of dark gray; and, in series, by the rather less intense lemon yellow of the under parts.

Subspecific summary:

- (a) Wing length: 80–84 mm. (♂ ♂); 77 mm. (♀ ♀).
- (b) Adult ♂ with first 4 primaries unmarked (100%);
adult ♀ with first 4 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ black (100%).

Specimens examined: 6 ♂ ♂, 2 ♀ ♀.

Range: Java; Bali.

3. *Pericrocotus flammeus exul* Wallace

Pericrocotus exul Wallace, Proc. Zool. Soc. London, "1863": 492–493, 1864 (Lombok).

The adult male differs from that of *siebersi* by having the color of the lower back, rump, and upper tail-coverts bright orange chrome, not flame scarlet; the markings of the remiges and rectrices mikado orange, rather than salmon orange or orange chrome; the under parts bright cadmium yellow instead of orange chrome.

The adult female is probably inseparable from that of *siebersi*, but in series may have the lemon-yellow under parts very slightly paler.

Subspecific summary:

- (a) Wing length: 82–85 mm. (♂ ♂); 81–83 mm. (♀ ♀).
- (b) Adult ♂ with first 4 primaries unmarked (100%);
adult ♀ with first 4 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ black (100%).

Specimens examined: 3 ♂ ♂, 3 ♀ ♀.

Range: Lombok.

Remarks: This form is very closely related to *siebersi*, from which it differs only by a loss of some of the red lipochrome.

B. REVERSIONARY AGGREGATE

I

4. *Pericrocotus flammeus leytensis* Steere

Pericrocotus Leytensis Steere, List of the Birds and Mammals collected by the Steere Expedition to the Philippines: 15, 1890 (Leyte, P. I.).

The adult male is distinguishable from that of *siebersi* by having the central rectrices with the terminal third of the outer web and the tip of the inner web orange chrome; the tibial plumes dark gray; the remaining under parts a slightly less intense orange chrome, scarcely redder anteriorly.

The adult female differs from that of *siebersi* by having the lores blackish; the front and a short supercilium lemon chrome, sharply demarcated from the slightly blue-glossed slate of the crown, nape, upper wing-coverts, scapulars, and upper half of the back; the lower back, rump, and upper tail-coverts a deep golden yellow; the tibial plumes gray or yellow mixed with gray; the remaining under parts bright lemon chrome.

Subspecific summary:

- (a) Wing length: 79 mm. (♂); 76-80 mm. (♀ ♀).
- (b) Adult ♂ with first 4 primaries unmarked (100%);
adult ♀ with first 4 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ black, with the terminal third of the outer web and the tip of the inner web orange chrome (100%).

Specimens examined: 1 ♂, 3 ♀ ♀.

Range: Samar; Leyte.

Remarks: The ancestor of the reversionary aggregate may be supposed to have reached the Philippine Archipelago from Formosa, although, strangely enough, the species is not now known to be represented there. That *leytensis* is not far behind the less advanced members of the erythristic group is indicated by the presence of a considerable amount of red lipochrome, the parti-colored central rectrices, and the probable occurrence of males with but three primaries unmarked.

5. *Pericrocotus flammeus novus* McGregor

Pericrocotus novus McGregor, Bull. Philippine Mus., No. 3: 13, 1904 (Irisan, Benguet [sub]province, Luzón, P. I.).

The adult male is nearest *leytensis*, differing by having the markings on the wing a less intense salmon orange, the tibial plumes orange mixed with gray, and the remaining under parts uniformly bright orange instead of orange chrome.

The adult female is separable from *leytensis* only by having the crown, nape, upper wing-coverts, scapulars, and upper half of the back slaty black, with a somewhat higher gloss.

Subspecific summary:

- (a) Wing length: 75-79 mm. (♂ ♂); 76-77 mm. (♀ ♀).
- (b) Adult ♂ with first 3 primaries unmarked (20%) or first 4 unmarked (80%);
adult ♀ with first 4 primaries unmarked (100%).

- (c) Central rectrices of adult ♂ black, with the terminal third of the outer web and the tip of the inner web orange chrome (100%).

Specimens examined: 5 ♂ ♂, 2 ♀ ♀.

Range: Luzón; Negros.

Remarks: Since we find, in *novus*, males with but three primaries unmarked, the same variation may be expected to appear in *leytensis*, which stands even nearer the members of the erythristic aggregation.

The one male seen from Negros cannot be separated from the birds of Luzón, although the former island lies in much closer proximity to Leyte and Samar.

6. *Pericrocotus flammeus johnstoniae* Ogilvie-Grant

Pericrocotus johnstoniae Ogilvie-Grant, Bull. Brit. Orn. Club, 16: 18, 1905 (Mount Apo, Mindanao, P. I.).

The adult male differs from that of *novus* by having the lower back, rump, and upper tail-coverts, as well as the marking of wings and tail, bright cadmium orange (the central rectrices but narrowly tipped with this color); the tibial plumes slate; the remaining under parts bright cadmium yellow.

The adult female is similar to that of *leytensis*, separable only by having the crown, nape, upper wing-coverts, scapulars, and upper half of the back a rather lighter blue-glossed slate.

Subspecific summary:

(a) Wing length: 81 mm. (♂ ♂); 79 mm. (♀ ♀).

(b) Adult ♂ with first 4 primaries unmarked (100%);
adult ♀ with first 4 primaries unmarked (100%).

(c) Central rectrices of adult ♂ black, with the tip of each web cadmium orange (100%).

Specimens examined: 2 ♂ ♂, 2 ♀ ♀.

Range: Mindanao.

7. *Pericrocotus flammeus marchesae* Guillemard

Pericrocotus marchesae Guillemard, Proc. Zool. Soc. London, 1885: 259, pl. 18, fig. 1 (Maimbun, Sulu [Joló] Island, Sulu Province, P. I.).

The adult male is exactly like that of *johnstoniae*, except that it has the lower back, rump, upper tail-coverts, the markings of remiges and rectrices, and the under parts below the throat bright golden yellow. The tibial plumes may be slate or slate mixed with golden yellow.

Of three adult females before me, two differ from the male only by having a frontal band and the chin and throat bright golden yellow instead of glossy blue-black. The third seems to be insepara-

ble from females of *johnstoniae*, although the golden yellow of the upper parts may be slightly more intensely colored.

Subspecific summary:

- (a) Wing length: 79–80 mm. (♂♂); 75–80 mm. (♀♀).
- (b) Adult ♂ with first 4 primaries unmarked (100%);
adult ♀ with first 4 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ black, with the tip of each web golden yellow (100%).

Specimens examined: 3 ♂♂, 3 ♀♀.

Range: Joló.

C. ERYTHRISTIC AGGREGATE

I

8. *Pericrocotus flammeus andamanensis* Beavan

Pericrocotus andamanensis "Tytler" Beavan, Ibis, 1867: 322 (Andaman Islands).

The adult male is apparently separable from that of *flammeus* only by having but three primaries unmarked on the outer web, and by having the lower back, rump, upper tail-coverts, the markings of remiges and rectrices, and the under parts below the throat bright scarlet instead of orange.

The adult female differs from that of *flammeus* by having the yellow portions of the plumage of a deeper hue and with a suggestion of orange suffusion.

Subspecific summary:

- (a) Wing length: 93–94 mm. (♂♂); 92 mm. (♀).
- (b) Adult ♂ with first 3 primaries unmarked (100%);
adult ♀ with first 4 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ black (100%).

Specimens examined: 2 ♂♂, 1 ♀.

Range: Andaman Islands (specimens seen from South Andaman and Henry Lawrence islands).

Remarks: In *andamanensis* we meet the first race in which the adult male ordinarily has less than four primaries unmarked.

9. *Pericrocotus flammeus speciosus* (Latham)

[*Turdus*] *speciosus* Latham, Index ornithologicus, 1: 363, 1790 (India; type locality restricted to "Himalayas," by Hartert, Nov. Zool., 9: 555, 1902; further restricted to Darjiling, by Stuart Baker, Jour. Bombay Nat. Hist. Soc., 27: 694, 1921).

From *andamanensis* the adult male is distinguishable by greater

size, by having but the first two primaries unmarked, and by frequently having a small amount of scarlet in the central rectrices.

The adult female is nearest that of *flammeus*, but is separable by greater size, by having only the first three primaries unmarked, and possibly by having the markings of remiges and rectrices and the under parts bright lemon chrome rather than lemon yellow.

Subspecific summary:

- (a) Wing length: 100–106 mm. (♂ ♂); 102–105 mm. (♀ ♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ as stated below.

Specimens examined: 6 ♂ ♂, 2 ♀ ♀.

Range: Himalayas of India; the plains of northern India (in winter).

Remarks: "In *speciosus* . . . the first two primaries in the male and the first three primaries in the female are unspotted. In the western Himalayas (Gharwal-Kumaon) the red on the central tail feathers is usually entirely absent. When it occurs it is merely a narrow line along the edge of the outer web [usually not reaching the tip] about one inch in length. In the Eastern Himalayas (Sikkim-Duars) the red is more often found and is greater in extent, though it seldom reaches to the shaft. The western birds on the whole are slightly larger than the eastern, but the sum of these characters is not sufficient to allow of the separation into the usual east and western ranges. The explanation no doubt is that the Scarlet Minivet is a comparatively recent colonist of the Himalayas. It is not yet common beyond the Jumna Valley and the most westerly authentic record is Kulu" (Whistler and Kinnear, *Jour. Bombay Nat. Hist. Soc.*, 36: 340, 1933).

Whistler and Kinnear (*tom. cit.*: 341) state that the wing length of 17 males ranged from 100 to 110.5 mm.; of eight females, from 97.5 to 108 mm.

10. *Pericrocotus flammeus fohkiensis* Buturlin

Pericrocotus speciosus fohkiensis Buturlin, *Messenger ornithologique*, 1: 263–264, 1910 (Ashong, Fuhkien).

Pericrocotus speciosus fohkiensis Stuart Baker, *Bull. Brit. Orn. Club*, 40: 116, 1920 ("Yamahan" = Yamakan, Fuhkien).

The adult male is nowise separable from that of *speciosus*.

The adult female is distinguishable from that of *speciosus* by having the lower back, rump, and upper tail-coverts bright olive green (occasionally with a slight golden suffusion), and the under parts a paler, rather more greenish, lemon chrome.

Subspecific summary:

- (a) Wing length: 102-108 mm. (♂ ♂); 97-104 mm. (♀ ♀).
- (b) Adult ♂ with first 2 primaries unmarked (67-%) or first 3 unmarked (33+%);
adult ♀ with first 3 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ all black (67-%) or with a narrow line of scarlet along the edge of the outer web, usually not reaching the tip (33+%).

Specimens examined: 6 ♂ ♂, 6 ♀ ♀.

Range: Fuhkien; Kwangtung (in winter).

11. *Pericrocotus flammeus elegans* (McClelland)

Phœnicornis elegans McClelland, Proc. Zool. Soc. London, "1839": 156-157, 1840 (Assam; type locality here restricted to the neighborhood of Sadiya, northeastern Assam).

Pericrocotus fraterculus Swinhoe, Ibis, 1870: 244 (Hainan).

Pericrocotus speciosus bakeri La Touche, Bull. Brit. Orn. Club, 42: 54, 1922 (Loukouchai and Mengtze, southeastern Yunnan).

This form in either sex can be distinguished from *speciosus* only by its lesser size; some larger individuals can be recognized as *elegans* only by locality.

Subspecific summary (based on Assamese populations alone):

- (a) Wing length: 96-103 mm. (♂ ♂); 93-101 mm. (♀ ♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ all black (43+%) or with a narrow line of scarlet along the edge of the outer web, usually not reaching the tip (57-%).

Specimens examined: 30 ♂ ♂, 20 ♀ ♀.

Range: Assam; Burma (north of the range of *suchitrae*); Yunnan; northeastern Laos; Tongking; northern Annam; Hainan; Karenni (in winter); northern Siam (in winter).

Remarks: It has long been recognized that the Scarlet Minivet of Assam cannot be separated from that of Hainan, and because it has been believed that the name *elegans* must be either synonymized with *speciosus* or applied to the more erythristic race of southern Burma, Assamese populations have been called "*fraterculus*."

The long series before me from many parts of Assam show that, in that province (with the possible exceptions of the Daffa and Lushai Hill tracts, whence no specimens have been seen) but one form is resident, and that it is intermediate between *suchitrae* and *speciosus*. That McClelland's type specimen is of the usual Assamese variety may be accepted from Oates's over-hasty statement that it "is clearly referable to *P. speciosus*" (Fauna of British India, Birds, 1: 481,

1889) and Ticehurst's assertion (Jour. Bombay Nat. Hist. Soc., 34: 907, 1931) that it is a male with wing measuring 97 mm.

La Touche's "*bakeri*" was described after comparison only with *fohkiensis*. The adult male was said to differ by having the central rectrices with the terminal half "broadly edged with red," and by having the red portions of the plumage of a different tone. The color difference seems, however, to be imaginary, and the type in the Museum of Comparative Zoölogy has the central rectrices not broadly, but narrowly, edged with red!

Just as *speciosus* intergrades through *elegans* and, presumably in central Burma, through *elegans* > *suchitrae*, with *suchitrae*, we might expect to find in northern Indochina similarly intergradient populations between *fohkiensis* and *suchitrae*. In fact, "*bakeri*" is just such an intergrade, and since it seems to be impossible to delimit an area in which birds that answer to the description of "*bakeri*" occur with a frequency as high as 75% of the population, and "*bakeri*" has no definite character of any other category by which it may be known from *elegans* or *elegans* > *suchitrae*, I am compelled to place La Touche's name in synonymy with *elegans*.

From one restricted area in Haut-Laos, the population of which has been recorded as "*bakeri*," I have seen specimens whose central rectrices varied individually from all black (*elegans*), through narrowly red-edged (*elegans* or "*bakeri*"), to broadly red-edged ("*bakeri*")!

To show the possible variation within the subspecies, I give below the results of statistical study of the several populations examined:

GARO HILLS

Populational summary:

- (a) Wing length: 96 mm. (♂); 98 mm. (♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ with a narrow line of scarlet along the edge of the outer web (100%).

Specimens examined: 1 ♂, 1 ♀.

KHASI HILLS

Populational summary:

- (a) Wing length: 96-103 mm. (♂♂); 96 mm. (♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ all black (50%) or with a narrow line of scarlet along the edge of the outer web (50%).

Specimens examined: 2 ♂♂, 1 ♀.

NORTH CACHAR

Populational summary:

- (a) Wing length: 96–101 mm. (♂ ♂); 95–101 mm. (♀ ♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ all black (48+%) or with a narrow to broad line of scarlet along the edge of the outer web (52–%).

Specimens examined: 21 ♂ ♂, 14 ♀ ♀.

NORTHEASTERN ASSAM

Populational summary:

- (a) Wing length: 96–100 mm. (♂ ♂); 93–96 mm. (♀ ♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ all black (67–%) or with a narrow line of scarlet along the edge of the outer web (33+%).

Specimens examined: 6 ♂ ♂, 4 ♀ ♀.

NORTHERN BURMA

Populational summary:

- (a) Wing length: 96–97 mm. (♂ ♂).
- (b) Adult ♂ with first 2 primaries unmarked (50%) or first 3 unmarked (50%).
- (c) Central rectrices of adult ♂ all black (50%) or with a narrow line of scarlet along the edge of the outer web (50%).

Specimens examined: 2 ♂ ♂.

NORTHERN SIAM IN WINTER

Populational summary:

- (a) Wing length: 97–103 mm. (♂ ♂); 102 mm. (♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ all black (100%).

Specimens examined: 2 ♂ ♂, 1 ♀.

NORTHEASTERN LAOS

Populational summary:

- (a) Wing length: 97–100 mm. (♂ ♂); 95–96 mm. (♀ ♀).
- (b) Adult ♂ with first 2 primaries unmarked (75%) or first 3 unmarked (25%);
adult ♀ with first 3 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ all black (25%) or with a narrow line of scarlet along the edge of the outer web (25%) or with a broad line of scarlet along the edge of the outer web (50%).

Specimens examined: 4 ♂ ♂, 2 ♀ ♀.

HAINAN (data taken from Ticehurst, *tom. cit.*: 906)*Populational summary:*

- (a) Wing length: 94–98 mm. (♂ ♂).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).

- (c) Central rectrices of adult ♂ "wholly black or occasionally edged with red on distal half of outer web."

Specimens examined: 11 ♂♂, — ♀♀.

12. *Pericrocotus flammeus minythemelas* Oberholser

Pericrocotus andamanensis minythemelas Oberholser, Smithsonian Misc. Coll., 60 (No. 7): 14, 1912 (Simalur Island, west of Sumatra).

The adult male is very near to that of *andamanensis*, perhaps separable only by having a considerable extent of scarlet on each central rectrix; in 89—% of those seen, all but the concealed base of the outer web is scarlet, while the inner web is black (frequently scarlet at the extreme tip).

The adult female differs from that of *andamanensis* by having the crown, nape, upper wing-coverts, scapulars, and upper half of the back a slightly blue-glossed slate instead of gray.

Subspecific summary:

- (a) Wing length: 90–94 mm. (♂♂); 88–90 mm. (♀♀).
(b) Adult ♂ with first 3 primaries unmarked (100%);
adult ♀ with first 4 primaries unmarked (100%).
(c) Central rectrices of adult ♂ with the inner web black and all but the concealed base of the outer web scarlet (89—%), or with black invading the scarlet of the outer web along one-fourth of the shaft (11+%).

Specimens examined: 9 ♂♂, 3 ♀♀.

Range: Simalur.

13. *Pericrocotus flammeus modiglianii* Salvadori

Pericrocotus modiglianii Salvadori, Ann. Mus. Civ. Stor. Nat. Genova, (ser. 2) 12: 130–131, 1892 (Enggano Island, west of Sumatra).

The adult male is not certainly separable from that of *minythemelas*, although, as will be shown below, the majority of the population have the pattern of the central rectrices somewhat different.

The adult female differs from that of *minythemelas* by having the crown, nape, upper wing-coverts, scapulars, and upper half of the back a lighter slate (scarcely glossed), and by having the yellow portions of the plumage with less suggestion of orange.

Subspecific summary:

- (a) Wing length: 92–96 mm. (♂♂); 92–93 mm. (♀♀).
(b) Adult ♂ with first 3 primaries unmarked (86—%) or first 4 unmarked 14+%;
adult ♀ with first 3 primaries unmarked (60%) or first 4 unmarked (40%).
(c) Central rectrices of adult ♂ with the inner web black and the outer web varying individually from black with a scarlet edging on the distal half, at first narrow, then suddenly expanding on the apical quarter to touch

the shaft (69+%), through various intermediate stages to the patterns shown by *minythomelas* (23+%).

Specimens examined: 14 ♂♂, 5 ♀♀.

Range: Enggano.

14. *Pericrocotus flammeus xanthogaster* (Raffles)

Lanius xanthogaster Raffles, Trans. Linn. Soc. London, 13 (pt. 2): 309, 1822 (Sumatra; type locality restricted to Benkulan, by Kinnear and Robinson, Bull. Brit. Orn. Club, 47: 130, 1927).

The adult male can be distinguished from that of *minythomelas* only by its lesser size.

The adult female is nearest that of *modiglianii*, from which it is probably separable by no character but lesser size.

Subspecific summary:

- (a) Wing length: 77–86 mm. (♂♂); 88 mm. (♀♀).
- (b) Adult ♂ with first 3 primaries unmarked (50%) or first 4 unmarked (50%); adult ♀ with first 4 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ with the inner web black (sometimes scarlet at the extreme tip) and all but the concealed base of the outer web scarlet (100%).

Specimens examined: 2 ♂♂, 1 ♀.

Range: Sumatra; Bangka; Biliton; Malay States (hills of Johore and Negri Sembilan and in the western lowlands from Singapore to the Siamese frontier).

15. *Pericrocotus flammeus insulanus*, subsp. nov.

Type: U. S. National Museum No. 191587, adult female, collected on Mount Kinabalu, British North Borneo, early in 1904, by George H. Goss.

Diagnosis: The adult male seems to be inseparable from that of *xanthogaster*.

The adult female differs from that of *xanthogaster* by having the yellow of the front more restricted and more sharply defined from the slate of the crown; the crown, nape, upper wing-coverts, scapulars, and upper half of the back a rather deeper slate; the lower back, rump, and upper tail-coverts bright olive green (without the golden suffusion of *xanthogaster*); the under parts a paler, less golden, lemon chrome.

Subspecific summary:

- (a) Wing length: 81–84 mm. (♂♂); 80 mm. (♀♀).
- (b) Adult ♂ with first 3 primaries unmarked (67–%) or first 4 unmarked (33+%); adult ♀ with first 4 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ with the inner web black (sometimes scarlet

at the extreme tip) and all but the concealed base of the outer web scarlet (100%).

Specimens examined: 3 ♂♂, 3 ♀♀.

Range: Borneo.

16. *Perocrocotus flammeus flammifer* Hume

[*Pericrocotus*] *flammifer* Hume, *Stray Feathers*, 3: 320-321, footnote, 1875 (region of Pak Chan Estuary, Malay Peninsula at lat. 10° N.).

The adult male is distinguishable from that of *xanthogaster* only on average characters: by slightly greater size and by having the number of unmarked primaries two or three (rarely or never four).

The adult female is separable from that of *xanthogaster* by having the lower back, rump, and upper tail-coverts much more strongly suffused with golden, and by having, in a majority of the population, but three primaries unmarked.

Subspecific summary:

- (a) Wing length: 84-90 mm. (♂♂); 84-88 mm. (♀♀).
- (b) Adult ♂ with first 2 primaries unmarked (35%) or first 3 unmarked (65%); adult ♀ with first 3 primaries unmarked (71+) or first 4 unmarked (29-%).
- (c) Central rectrices of adult ♂ with the inner web black (frequently scarlet at the extreme tip) and all but the concealed base of the outer web scarlet (100%).

Specimens examined: 20 ♂♂, 7 ♀♀.

Range: Malay Peninsula from the Malay States (north and east of the range of *xanthogaster*) north to northern Tenasserim and southwestern Siam (where it is better called *flammifer* > *suchitrae*).

Remarks: The type locality of this form unfortunately lies on the Isthmus of Kra, just where the Malaysian avifauna ordinarily changes to the Indo-Chinese. This means that *flammifer* is a composite, made up of populations whose characters at one extreme come too near those of *xanthogaster*; at the other, to those of *suchitrae*. Thus, in the Mae Klong basin of southwestern Siam, we find a population intermediate between *flammifer* and *suchitrae*, but rather nearer the former in the characters of remiges and rectrices and in the dark mantle of the female.

SOUTHWESTERN SIAM

Populational summary:

- (a) Wing length: 90-95 mm. (♂♂); 87-93 mm. (♀♀).
- (b) Adult ♂ with first 2 primaries unmarked (40%) or first 3 unmarked (60%); adult ♀ with first 3 primaries unmarked (60%) or first 4 unmarked (40%).
- (c) Central rectrices of adult ♂ with the inner web black (frequently scarlet at the extreme tip) and all but the concealed base of the outer web

scarlet (73—%) or with black tending to invade the scarlet of the outer web (27+%).

Specimens examined: 11 ♂♂, 6 ♀♀.

17. *Pericrocotus flammeus suchitrae*, subsp. nov.

Type: U. S. National Museum No. 324493, adult male (in fresh plumage), collected on Doi Khun Tan, northern Siam (at lat. 18° 30' N., long. 99° 20' E.), on October 23, 1929, by Hugh M. Smith.

Diagnosis: The adult male is separable from that of *flammifer* by greater size and by having, in a much greater proportion of the population, but two primaries unmarked; from that of *semiruber*, perhaps only by lesser size.

The adult female is distinguished from that of *flammifer* by greater size and by having the crown, nape, upper wing-coverts, scapulars, and upper half of the back olive-washed gray (as in *flammeus* or *speciosus*) instead of slate; it is probably inseparable from that of *semiruber* except by lesser size.

Subspecific summary:

- (a) Wing length: 90–100 mm. (♂♂); 88–98 mm. (♀♀).
- (b) Adult ♂ with first 2 primaries unmarked (92+%) or first 3 unmarked (8—%);
adult ♀ with first 2 primaries unmarked (15+%) or first 3 unmarked (85—%).
- (c) Central rectrices of adult ♂ with the inner web black (frequently scarlet at the extreme tip) and with two-thirds or more of the total length of the outer web scarlet (78%) or with scarlet invading the black of the inner web (11%) or with black tending to invade the scarlet of the outer web (11%).

Specimens examined: 71 ♂♂, 43 ♀♀.

Range: Burma, south of the range of *elegans* and north of that of *flammifer*; Siam, north and east of the range of *flammifer*; Indochine, south and west of the range of *elegans* (but in southern Annam and Cochinchine better called *suchitrae* > *flammifer*).

Remarks: The new form is named in honor of Miss Suchitrā Punyaraatabandhu of Bangkok and Washington.

To show the possible variation within the subspecies and that all populations within the range outlined above seem to be racially inseparable from topotypical *suchitrae*, I give here the results of statistical study of the several populations examined:

CHIN HILLS

Populational summary:

- (a) Wing length: 94–96 mm. (♂♂); 91–93 mm. (♀♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).

- (c) Central rectrices of adult ♂ with the inner web black (sometimes scarlet at the extreme tip) and with two-thirds or more of the total length of the outer web scarlet (100%).

Specimens examined: 5 ♂♂, 2 ♀♀.

ARAKAN

Populational summary:

- (a) Wing length: 94–97 mm. (♂♂); 88–92 mm. (♀♀).
(b) Adult ♂ with first 2 primaries unmarked (67–%) or first 3 unmarked (33+%);
adult ♀ with first 3 primaries unmarked (100%).
(c) Central rectrices of adult ♂ with the inner web black (sometimes scarlet at the extreme tip) and with two-thirds or more of the total length of the outer web scarlet (100%).

Specimens examined: 3 ♂♂, 2 ♀♀.

NORTHERN SIAM

Populational summary:

- (a) Wing length: 91–100 mm. (♂♂); 90–98 mm. (♀♀).
(b) Adult ♂ with first 2 primaries unmarked (95–%) or first 3 unmarked (5+%);
adult ♀ with first 2 primaries unmarked (13+%) or first 3 unmarked (87–%).
(c) Central rectrices of adult ♂ with the inner web black (frequently scarlet at the extreme tip) and with two-thirds or more of the total length of the outer web scarlet (78–%, including the type specimen) or with scarlet invading the black of the inner web (14+%) or with black tending to invade the scarlet of the outer web (8%).

Specimens examined: 37 ♂♂, 23 ♀♀.

HAUT-MÉKONG

Populational summary:

- (a) Wing length: 95–99 mm. (♂♂); 95–98 mm. (♀♀).
(b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 2 primaries unmarked (33+%) or first 3 unmarked (67–%).
(c) Central rectrices of adult ♂ with the inner web black (sometimes scarlet at the extreme tip) and with two-thirds or more of the total length of the outer web scarlet (100%).

Specimens examined: 2 ♂♂, 3 ♀♀.

WEST-CENTRAL SIAM

Populational summary:

- (a) Wing length: 96 mm. (♂); 90–91 mm. (♀♀).
(b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).
(c) Central rectrices of adult ♂ with the inner web black and with two-thirds of the total length of the outer web scarlet (100%).

Specimens examined: 1 ♂, 2 ♀♀.

NORTHERN PARTS OF EASTERN SIAM

Populational summary:

- (a) Wing length: 97–100 mm. (♂♂); 94 mm. (♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ with the inner web black (sometimes scarlet at the extreme tip) and with two-thirds or more of the total length of the outer web scarlet (100%).

Specimens examined: 2 ♂♂, 1 ♀.

SOUTHERN PARTS OF EASTERN SIAM

Populational summary:

- (a) Wing length: 90–98 mm. (♂♂); 92 mm. (♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 2 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ with the inner web black (sometimes scarlet at the extreme tip) and with two-thirds or more of the total length of the outer web scarlet (100%).

Specimens examined: 6 ♂♂, 1 ♀.

SOUTHEASTERNMOST SIAM

Populational summary:

- (a) Wing length: 90–95 mm. (♂♂); 91–94 mm. (♀♀).
- (b) Adult ♂ with first 2 primaries unmarked (63–%) or first 3 unmarked (37+%);
adult ♀ with first 2 primaries unmarked (25%) or first 3 unmarked (75%).
- (c) Central rectrices of adult ♂ with the inner web black (frequently scarlet at the extreme tip) and with two-thirds or more of the total length of the outer web scarlet (100%).

Specimens examined: 8 ♂♂, 4 ♀♀.

EASTERNMOST SIAM

Populational summary:

- (a) Wing length: 92–98 mm. (♂♂); 91–94 mm. (♀♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ with first 3 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ with the inner web black (frequently scarlet at the extreme tip) and with two-thirds or more of the total length of the outer web scarlet (100%).

Specimens examined: 7 ♂♂, 5 ♀♀.

SOUTHERN ANNAM

Populational summary:

- (a) Wing length: 90–96 mm. (♂♂); 91–93 mm. (♀♀).
- (b) Adult ♂ with first 2 primaries unmarked (72%) or first 3 unmarked (12%)
or first 2 in one wing, first 3 in the other unmarked (16%);
adult ♀ with first 3 primaries unmarked (94%) or first 4 unmarked (6%).
- (c) Central rectrices of adult ♂ with the inner web black (frequently scarlet at the extreme tip) and with two-thirds or more of the total length of the outer web scarlet (82%) or with scarlet invading the black of the inner

web (5%) or with black more or less strongly invading the scarlet of the outer web (8%) or with two-thirds or more of the total length of the outer web black (5%).

Specimens examined: 25 ♂♂, 17 ♀♀.

COCHINCHINE

Populational summary:

- (a) Wing length: 88 mm. (♂); 92 mm. (♀).
- (b) Adult ♂ with first 3 primaries unmarked (100%);
adult ♀ with first 4 primaries unmarked (100%).
- (c) Central rectrices of adult ♂ with the inner web black (sometimes scarlet at the extreme tip) and with more than two-thirds of the total length of the outer web scarlet (100%).

Specimens examined: 1 ♂, 1 ♀.

18. *Pericrocotus flammeus semiruber* Whistler and Kinnear

Pericrocotus speciosus semiruber Whistler and Kinnear, Jour. Bombay Nat. Hist. Soc., 36: 340, 1933 (Sankrametta, elev. 3,500 feet, Vizagapatam District, Madras Presidency, India).

P. f. semiruber, in either sex, is somewhat larger than *suchitrae*; it is not likely that the two forms can be separated by any other character.

Subspecific summary (data taken from Whistler and Kinnear, *tom. cit.*: 340, 341):

- (a) Wing length: 100–106.5 mm. (♂♂); 96–102 mm. (♀♀).
- (b) Adult ♂ with first 2 primaries unmarked (100%);
adult ♀ “usually” with first 3 primaries unmarked.
- (c) Central rectrices of adult ♂ with “the red . . . very extensive, usually occupying the whole of the terminal two-thirds of the outer webs.”

Specimens examined: 7 ♂♂, 4 ♀♀.

Range: Northeastern Madras Presidency; eastern Central Provinces; Orissa.

Remarks: “Our series . . . differ from *speciosus* in their smaller size and the greater amount of red on the tail, in other words an advance along the lines in which the East Himalayan bird is tending to vary from the West Himalayan” (Whistler and Kinnear, *tom. cit.*: 341).

This race is so slightly differentiated from *suchitrae* of Arakan and the Chin Hills that it is difficult not to believe that the species has at some quite recent period ranged continuously across at least the upper parts of the deltaic region that now separates them by a distance of some 300 miles. The Scarlet Minivet is by no means restricted to mountains; in Siam and elsewhere it occurs on the plains wherever lowland evergreen is found. If no form of the species is now known from the Gangetic alluvium, it may well result from the reduction in forest growth brought about by the intensive cultivation necessary to support a dense population.

U. S. National Museum
Washington, D. C.