

American Museum Novitates

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CENTRAL PARK WEST AT 79TH STREET, NEW YORK 24, N.Y.

NUMBER 1971

OCTOBER 29, 1959

Systematic Notes on Palearctic Birds. No. 38 Alcedinidae, Meropidae, Upupidae, and Apodidae

BY CHARLES VAURIE

The following notes were made during a study of these families in the preparation of the second volume of a check list of the Palearctic region; this volume will consist of the non-passerine birds. The material studied consists of the collections of the American Museum of Natural History, but I have also examined the series of *Upupa epops* and *Apus pacificus* in the British Museum (Natural History). The time that I could devote in London to these two species was brief, and series that I selected were kindly lent to me by the British Museum. A good series of *Merops orientalis* was also sent to me subsequently. I would like to express my gratitude to Mr. J. D. Macdonald for these loans and for the kind reception extended to me by him and his staff during my visit. Mr. D. Goodwin of the British Museum has also kindly compared and measured some specimens of *Apus* for me. I am in debt also to Dr. G. Niethammer for lending me a paratype from the collection of the Alexander Koenig Museum in Bonn, and Drs. J. P. Chapin and F. Salomonsen have given me the benefit of their advice, Dr. Salomonsen with *Upupa* and Dr. Chapin with the African forms discussed in these notes.

ALCEDINIDAE

Ceryle rudis

The Lesser Pied Kingfisher ranges from Africa to southern China, and four subspecies have been recognized by Peters (1945, p. 167).

Nominate *rudis* Linnaeus, 1758, type locality, Egypt, inhabits all of Africa south of the Sahara and ranges northward through the Nile Valley to the Near East and Asia Minor and thence southward to southern Iraq and southwestern and southern Iran. It is replaced in India (with the exception of Travancore, which is inhabited by *travancorensis* Whistler [in Whistler and Kinnear, 1935a, p. 760], type locality, Travancore), and in Ceylon, eastward to the Indo-Chinese countries and Yunnan, by *leucomelanura* Reichenbach, 1851, type locality, Ceylon, and in southeastern China and Hainan by *insignis* Hartert, 1910, type locality, Hainan. The last-named, however, is not sufficiently well differentiated from *leucomelanura* and, in my opinion, should be synonymized with it. This is true also of *afghanistanica* Koelz (1939, p. 79), type locality, Laghman, eastern Afghanistan. *Leucomelanura* differs from nominate *rudis* by having the base of the tail feathers pure white, not spotted with black as in the latter; *travancorensis*, which I have not examined, is said to be similar to *leucomelanura* but less spotted with white above and, on an average, more spotted with black on the flanks.

Peters (*loc. cit.*) has synonymized *afghanistanica* with *leucomelanura*, and its validity has been questioned by Whistler also, who states (1945, p. 291): "I have not examined Afghan birds but as these are from the Kabul River Valley they are hardly likely to differ from Punjab birds which like other Indian birds agree with *C. r. leucomelanura* from Ceylon." *Afghanistanica* is based on three females which, according to Koelz, differ from *leucomelanura* as follows: "broader white edgings to the dark feathers, the dark feathers have a blue-grey cast, the dark pectoral spots are weaker and less extensive, the bill averages shorter and the wing longer. There is, on the average, less black on the secondaries, especially on the inner web." I find, however, that the three specimens fall perfectly within the range of individual color variation of a series from various regions of India, which includes two from Ceylon, and are virtually identical in size. The three females from Afghanistan have a wing length of 139, 141, 146, and a bill length, measured from the anterior part of the nostril, of 46, 48, 49, whereas 11 females from India and one from Ceylon measure, respectively, 135-144 (140) and 48-57 (51.4). The specimen with the shortest bill was selected by Koelz for the type, but I suspect that the bill of this bird is abnormal or that the bird was not truly adult. I am not familiar with the plumage sequence of this species, but Dr. J. P. Chapin, whose advice I sought, believes also the bird may not be adult. The tip of the bill is intact in this specimen, but in the two paratypes the tip is

broken in one and very blunt and worn in the other; when intact, the bill in these specimens probably measured at least as much as or more than 2 mm. longer.

Hartert (1910, p. 216) stated that he separated *insignis* from *leucomelanura* because the former has a longer bill, "generally about 1 cm. longer." The bill averages longer and is proportionately slightly higher in *insignis*, but actual measurements show that the difference was overemphasized by Hartert. In the original series of *insignis*, the bill from the nostril measures 49, 52, 53, 55, 55, 55, 56, 56, 56, 58, 58 (55) in females, and 50, 56, 56, 56, 57 (55) in males, the specimen with the longest bill being the type. Its height, measured at the level of the nostril, is 13–15 (13.9) in the females and 13–14.2 (13.9) in the males. Specimens from India measure 48, 49, 49, 50, 51, 51, 51, 52, 52, 53, 57 (51.4) in females, and 50, 51, 52, 52, 52, 53, 54, 55, 56, 57, 58 (53.7) in males, the heights being, respectively, 12.5–15 (13.6), and 12–14.2 (13.4).

The range of *insignis* was said by Hartert (1912, p. 878) to include southern China, extending, according to Peters (*loc. cit.*), north to the Yangtze Valley. However, Bangs and Van Tyne (1931, p. 56) state that "nine [specimens] from south China have bills exactly like two specimens we have examined from India (Kooloo Valley) [= Kulu, Punjab]," and Yen (1933, p. 637) identified the specimen he collected in Kwangsi as *leucomelanura*. In the only two birds that I have seen from southeastern China, both of them males, one from Kwangtung has a bill 61 in length by 14 in height, but the other, taken in Fukien, has it 53 by 13.5. Farther inland, I find that in a series from the region of Tengyueh (now Tengchung) in western Yunnan, identified as *leucomelanura* by Rothschild (1926, p. 243), the bill measures 53, 53, 55, 58, 61 in length by 12.5, 13.5, 13.8, 14, 15 in height in males, and, respectively, 53, 55, 55, 14, 14, 14.5 in females. In other words, the birds of China do not differ constantly from *leucomelanura*, and the measurements given here show that individual variation is great, with so much overlap between the populations of China, Hainan, and India that it is impossible, I believe, to recognize *insignis*.

To clear a possible source of error concerning the general range of the species and of nominate *rudis*, mention should be made that this kingfisher does not breed in Cyprus and probably does not occur in northwest Africa. Meinertzhagen (1954, p. 297), states that nominate *rudis* breeds in Cyprus and from "Morocco to western Egypt." However, although nominate *rudis* wanders irregularly to Cyprus in the winter, it does not breed on the island, where conditions are not suitable, and there are no records for northwest Africa. To be sure, Har-

tert (1923b, p. 117) mentions a very old record for Morocco and another for Algeria but warns that these are doubtful and unconfirmed.

MEROPIDAE

Merops albicollis

The White-throated Bee-eater breeds in the dry belt south of the Sahara from Senegal to the former Anglo-Egyptian Sudan and then to Abyssinia and Somaliland and probably southwestern Arabia.¹ Mackworth-Praed and Grant (1952, p. 592) state: "It also breeds in Uganda in a southward extension of its breeding range," but, although the bird may breed in northernmost Uganda, I have found no breeding record in the literature. After the breeding season, which extends from July or possibly June to September, this bee-eater migrates south to the coastal districts of upper Guinea, the Cameroons, Angola, the Congo, and east Africa to Tanganyika. The breeding range extends northward into the southern borders of the Palearctic region, to the Aïr in the southern Sahara.

The populations from eastern Africa have a longer wing and bill than those from the western part of the range, and two subspecies are recognized by some authors: nominate *albicollis* Vieillot, 1817, type locality, Senegal, in the west; and *major* Parrot, 1912, type locality, Bagamoyo, Tanganyika, in the east. However, it seems best not to recognize any subspecies, as the measurements show some overlap, and it is impossible to identify with certainty the majority of migrants and winter visitors. The measurements given in the literature are not helpful, as the authors have combined breeding birds with others collected in the winter quarters where different populations appear to mix, or the measurements are inadequate, consisting of mere averages or a statement of the range of individual variation of an unspecified number of specimens without mention of sex and average measurement. The measurements given below are those of breeding males measured by me. I have added two males from Arabia, as the birds that reach

¹ No nests seem to have been reported so far from Arabia. However, Sclater (1917, p. 175) believes it is "probably a resident" in southern Arabia and reports specimens collected in the Amiri district on the border of Yemen and Aden in December and February; also two birds collected at Hajeilah in the Yemen on April 9 and 14, though the correct dates of these two specimens, which I have seen, are April 7 and 17. I have also examined two adults in worn breeding plumage collected in southern Arabia on May 5 and 9, and two other adults in the same plumage and two young birds collected near Lahej on August 16-20, or at a time when the species is said to breed in Africa.

this region are very probably of eastern African stock, and also the measurements of two series collected in the winter quarters. These two series show that small and large birds and intermediates share the same winter quarters, and it seems futile to identify them as to subspecies on the basis of size differences. The males from the Congo are the entire series; the 10 from Uganda were taken at random from a very large series.

The coloration is very similar throughout the range but not uniform, as the birds which breed in the southern Sahara appear to be distinctly paler. A series of six specimens from the Aïr, consisting of five males and one female, is clearly paler and duller above, less green, and is slightly paler below, more whitish, including the under tail coverts, than any other series that I have examined from the breeding range. Two of the five males are also very distinctly paler, more "golden" rufous orange on the nape and upper mantle, and, on an average, the six specimens are bluer on the secondaries and rump.

Some of these differences were mentioned by Hartert (1921, p. 105) who has discussed this series. He stated that the birds of the Aïr were "very pale and very blue" but did not believe that these characters represented an instance of geographical variation, remarking that the specimens are "in worn and faded plumage, and can be perfectly matched by specimens from other countries." However, all the six specimens are in almost perfectly fresh, not worn, plumage, and I cannot match them as a series with specimens in comparative plumage from the rest of the range. I find also that 12 of 13 winter visitors to the Cameroons, and isolated migrants collected in April in the Gold Coast, Liberia, and Sierra Leone, are identical or virtually so with the specimens from the Aïr. Dr. J. P. Chapin and I believe therefore that paler populations probably breed in the southern Sahara and migrate and winter south to upper Guinea and the Cameroons. These paler birds are not matched by a single specimen in a series of 15 breeding individuals of both sexes from Senegal (the type locality of *albicollis* Vieillot), although the specimens from Senegal are in worn plumage and would be expected to be paler than the fresh birds from the Aïr.

The difference in coloration is not of taxonomic importance in my opinion, but is worthy of mention as authors have denied hitherto that this species varied geographically in coloration. To be sure, Parrot described *major* as having a wider band of black across the breast than nominate *albicollis*, but large series show that this character varies individually to the same extent in all the populations of the species.

THE GENUS *Aerops*: The White-throated Bee-eater (*albicollis*) and

Boehm's Bee-eater (*boehmi*), which inhabits Tanganyika, are typical bee-eaters in all respects, whether of behavior or morphology. Nevertheless, a separate genus (*Aerops*, the type of which is *albicollis*) is recognized for these two species, because their outer primary is longer and their wing tip more rounded than in the species of *Merops*. However, the length of the outer primary, though always shorter in *Merops*, varies somewhat in relative length from species to species, and the wing tip of *M. orientalis* (a small species similar to *albicollis* in general size) is rounded and differs only slightly from that of *albicollis*. Moreover, the latter is not identical with *boehmi*, in which the wing tip is distinctly more rounded and the outer primary distinctly longer. If differences in the shape of the wing tip and the relative length of the outer primary are considered to be of generic importance in the bee-eaters, one should, logically, erect a new monotypic genus for *boehmi*. It seems wise to me to consider that these differences are only of specific importance and to merge *Aerops* Reichenbach, 1852, with *Merops* Linnaeus, 1758. Hartert (*loc. cit.*) and Boetticher (1951), who has discussed the genera of bee-eaters, consider that *Aerops* is a subgenus of *Merops*, but such a distinction seems unnecessary.

MEASUREMENTS: The lengths of the wing and of the bill of adult males of *Merops albicollis* follow:

Western part of the breeding range: Senegal, 97, 98, 98, 98, 99, 99; 33, 33.5, 34, 37, 37, 37, 37; Air, 97, 97, 99, 100, 101; 33.5, 33.5, 34, 35, 39. Range of the wing length, 97–101 (98.5); of the bill length, 33–39 (35.3).

Eastern part of the breeding range: Sudan, 100, 103; 36, 37; Abyssinia, 98, 101, 102, 102, 102, 102, 103, 104, 104, 105, 106, 107, 108; 34, 34.5, 34.5, 36, 37, 37.5, 38, 38, 38, 39, 39.5, 41, 43, 44; Somaliland, 97+, 98+, 100+, 101, 106, 106, 107; 37, 38, 38, 39, 39, 40, 41; Arabia, 100, 104; 35, 39. Range of the wing length (not including the three worn birds from Somaliland), 98–108 (103.4); of the bill length, 34–44 (38.2).

Winter visitors: Eastern Congo, 94, 99, 99, 101, 102, 103, 104 (100.3); 34.5, 35, 35, 36, 36, 37, 37 (35.8); Uganda, 96, 98, 99, 101, 102, 102, 102, 103, 103, 105 (101.1); 34, 35, 35.5, 36, 37, 37, 37, 37, 39, 40 (36.8).

Dr. J. P. Chapin suggested this study and I would like to express my appreciation to him for examining the material and giving me the benefit of his kindly advice. A little over 200 specimens were compared.

Merops orientalis

The Little Green Bee-eater ranges from the dry belt south of the Sahara and the Nile Valley eastward to Arabia, southern Iran, India south to Ceylon, and the Indo-Chinese countries to southern Yunnan. It varies geographically, and Peters (1945, pp. 236–237) recognized eight

subspecies: *viridissimus* and *cleopatra* in Africa, *cyanophrys*, *muscatensis*, and *najdanus* in Arabia, and *beludschicus*, nominate *orientalis*, and *birmanus* from Iran eastward. The correct name of the last-named, however, is *ferrugeiceps* Anderson ("1878" [1879], p. 582), type locality, upper Burma and Sanda in Yunnan,¹ not *birmanus* Neumann, 1910, type locality, Myingyan, central Burma.

Since the publication of Peters' work, two additional subspecies have been proposed: *ceylonicus* by Whistler (1944, p. 223), type locality, Kalawewa, Ceylon; and *flavoviridis* by Niethammer (1955, p. 53), type locality, Archei, Ennedi, Sahara. The latter, as shown below, is not valid and is a synonym of *viridissimus* Swainson, 1837, type locality, Senegal; while *ceylonicus* is so very poorly differentiated from nominate *orientalis* Latham, 1801, type locality, Mahratta, India, that it should be synonymized with it. Seven specimens that I have seen from Ceylon are virtually identical with specimens from peninsular and southern India. They differ from the latter by averaging a little more golden on the hind neck or nape and by having a very slightly longer bill, but the difference in coloration is very slight, and the measurements overlap, with only a trivial difference in average. In the specimens I have measured, the bill measures from its insertion in the skull:

Ceylon: Males, 30, 33.5, 34; females, 31, 34; unsexed, 35, 35; range of seven specimens, 30–35 (33.5).

Peninsular and southern India: Males, 30, 32, 32, 33, 33, 35; females, 30, 30, 30, 31, 32, 33, 33, 33, 34, 35; unsexed, 30, 31, 32, 33, 34, 34, 35, 35, 35, 37; range of 26 specimens, 30–37 (32.8).

Whistler mentioned also that the bill was stouter in birds from Ceylon, but I can see no difference whatever in the material I have compared.

Marien (1950) has discussed the races of Asia, only one of which (*beludschicus* Neumann, 1910, type locality, "Sarbac" [= Sarbaz], Persian Baluchistan) inhabits the Palearctic region. It differs from nominate *orientalis* by being paler, by having a more golden sheen on the crown, and by being bluer, less green, on the under parts.

The populations of Arabia are bluer throughout than *beludschicus*, and the tips of their central tail feathers are less attenuated and much shorter. In the birds of Arabia, the tips exceed the other rectrices by

¹ Anderson's specimens from Burma were collected at Mandalay, Mengoon, and Shienpagah; these, and one specimen from Sanda, are stated by Anderson (*loc. cit.*) to "belong to Hodgson's variety *M. ferrugeiceps* [*sic*], which has the head and neck much redder than in the Indian birds, and the chin and throat more grassy green." *Merops ferrugiceps* [*sic*] Hodgson, 1844, is a *nomen nudum*.

only about 15–27 mm., as against about 30–65 in *beludschicus*. The population of the central Arabian Plateau (*najdanus* Bates, 1935, type locality, Riyadh) is distinctly paler, more yellowish, less bluish above and below, than those (*cyanophrys*) that inhabit western, southern, and the coastal districts of eastern Arabia from Muscat to Oman. The birds from the east were named *muscatensis* by Sharpe in 1886, with type locality, Muscat, but the specimens that I have compared from eastern and western Arabia are identical and show that *muscatensis* is not valid and is a synonym of *cyanophrys* Cabanis and Heine, 1860. The type locality of the latter was stated as merely “Arabia,” but according to Bates (1935) and also Stresemann (1954, p. 176) it was based on specimens collected by Hemprich and Ehrenberg at “Qonfudah” (according to Bates), or “Gumfude” (according to Stresemann). Bates spells it also “Kunfuda,” but all the variant spellings now equal Al Qunfidha, located at about latitude 19° 09' N. on the coast of Asir, and not in the Yemen as stated by Meinertzhagen (1954, p. 290).

Meinertzhagen (*loc. cit.*) has synonymized *muscatensis* with *cyanophrys*, but its validity had been questioned already by Guichard and Goodwin (1952, p. 298) who stated: “It seems to us very doubtful whether the race *muscatensis* should be upheld. The remarks of Yerbury and Sharpe (1886) about the smaller bill and small differences in shades of plumage are applicable to the type specimen, but do not hold good for other specimens from the type locality.” Nevertheless, de Schauensee and Ripley (1953, p. 82) who mention the remark of Guichard and Goodwin, have upheld *muscatensis*, because their series from Muscat had a short bill, measuring 24, 24, 24, 24.5, 24.5, 27, 27, 28 in males, 22.5 in one female, and 23.5 in an unsexed specimen, as against 28 in the single specimen of *cyanophrys* they had examined, an unsexed bird in which the bill probably measured slightly longer than 28, as its tip was broken. However, the specimens that I have measured show that the populations of eastern and western Arabia have a similar bill length. Birds from the east (“*muscatensis*”) from Muscat and Oman measure 33, 34 in males, and 30, 32, 32.5, 33, 33, 34, 35 in females; those from the west (Majran, Yemen, and Aden) measure 31, 32, 32, 32, 33.5 in males, 32, 32, 34 in females, and 29, 33, 34 in unsexed specimens. A male from Tarim in the eastern Hadhramaut has a bill length of 34, and three females from the region of Jidda and Mecca, one of 30, 32, 35. Birds from this last region were named *meccanus* by Bates in 1934 who, however, withdrew this form a year later (1935) as being a synonym of *cyanophrys*. In short, all the populations of western Arabia (Jidda, Mecca, Najran, Yemen, and Aden), southern Arabia (Tarim), and southeastern Arabia (Muscat and Tru-

cial Oman) appear to be identical (those of the plateau belonging to the paler *najdanus*.

In Africa, *cleopatra* Nicoll, 1910, type locality, Mazghouna near Cairo, breeds in Egypt in the Nile Valley south to Wadi Halfa on the border of northern Sudan. It occasionally migrates or wanders farther south and is reported as far south as Torit, not far from Uganda. *Cleopatra* is much greener than the two races of Arabia, a beautiful moss green above and below, with no blue on the throat. The tips of its central tail feathers are much longer and more attenuated, the tips exceeding the other rectrices by about 60–90 mm. It differs from *viridissimus*, which inhabits the rest of the range of the species in Africa, by being much greener, less yellowish, above and below, the general coloration of *viridissimus* being bronzy green.

I cannot confirm the validity of *flavoviridis* which appears to me to be indistinguishable from *viridissimus*. According to Niethammer, *flavoviridis*, which is based on three males from the Ennedi and four from the Aïr mountain massifs of the Sahara, differs from *viridissimus* by having a shorter and more slender bill and by being more yellowish, less bluish. The range of *flavoviridis* extends, according to Niethammer, south from the Aïr to the region of Agadés and eastward to the Nile Valley in the northern Sudan, being replaced farther south by *viridissimus*, in the region south of Agadés and on the White Nile and the Bahr el Ghazal. However, it seems to me that his comparative material was insufficient, as it consisted apparently of only six specimens from southern Sudan, one from Abyssinia, and two from Fort Lamy near Lake Chad. He has kindly lent me a paratype of *flavoviridis*, and I find that this specimen from Archei and others from the range of the latter as defined by Niethammer (namely, three from the Aïr collected north of Agadés, and 11 from northern Sudan collected at Kerma, Shendi, and Khartoum) are not separable from 15 topotypes of *viridissimus* and 23 other specimens from Senegambia, the region of Damergou south of Agadés, the White Nile, Bahr el Ghazal, Eritrea, and Abyssinia. Individuals become more yellow with wear throughout the range, and I can discern no differences whatever in the shape and length of the bill. The bill length of males in specimens measured by me is:

"*Flavoviridis*," paratype, Ennedi, 29.5; Aïr (Timia), 32.5; northern Sudan, 28.5, 30.5, 31.5, 32, 32, 32.5, 32.5, 33.

Viridissimus, topotypes from Senegal, 29, 30, 30, 30.5, 31, 31, 31, 31, 31.5, 32, 32, 32, 32, 32.5; Damergou, 29, 29.5, 29.5, 31, 31; White Nile, 32, 32, 32, 32.5, 33; Bahr el Ghazal, 30, 31.5; Abyssinia, 30, 32.

To summarize the Palearctic races and their characters:

1. *Merops orientalis viridissimus* (synonym, *flavoviridis*): Bronzy green in coloration, becoming more yellow with wear, tips of the central tail feathers long and well attenuated, exceeding the other rectrices by about 60 to 90 mm. Range, Africa in the dry belt south of the Sahara north to the Aïr and Ennedi Massifs in the Sahara.

2. *Merops orientalis cleopatra*: Much greener than *viridissimus*, moss green rather than bronzy green; tail similar to that of *viridissimus*. Range, Nile Valley in Egypt.

3. *Merops orientalis cyanophrys* (synonyms, *meccanus* and *muscatensis*): Darker and bluer green above than *cleopatra*, much bluer on the abdomen; chin, throat, forehead, and region above the eye blue, not green as in *cleopatra*, and dark band across the upper breast much broader and purple-black, not black as in *cleopatra*; tips of the central tail feathers much shorter and less attenuated, exceeding the other rectrices by only about 15 to 27 mm. Range, western Arabia (Medina south to Aden), southern Arabia (Hadhramaut), and southeastern Arabia (Muscat to Oman).

4. *Merops orientalis najdanus*: Similar to *cyanophrys* but paler above and below, more yellowish, less bluish, and with the band across the breast averaging narrower. Range, on the more arid Arabian Plateau (Nejd).

5. *Merops orientalis beludschicus*: Paler and brighter than *najdanus* above and below, more yellowish, less bluish, and with the band across the breast narrower and black; the tips of the central tail feathers are longer and more attenuated, exceeding the other rectrices by about 30 to 65 mm. Range, southern Iran eastward through Baluchistan to Sind, and probably suitable regions in North West Frontier Province to the region of Jalalabad in eastern Afghanistan, and arid parts of southern Punjab and Rajputana.

The differences between *beludschicus* and nominate *orientalis* are mentioned above; *ferrugeiceps* differs from nominate *orientalis* by being darker on the back and below, and by having the crown, nape, and upper part of the mantle ferruginous rather than green.

UPUPIDAE

Upupa epops

The Hoopoe is very widely distributed in the Palearctic, Ethiopian, and Oriental regions. It varies geographically, and nine subspecies have been recognized by Peters (1945, pp. 248–249), namely: nominate *epops*, *major*, *senegalensis*, *orientalis*, *ceylonensis*, *saturata*, *longirostris*, *marginata*, and *africana*, but *orientalis* was listed with a query by

Peters who states it is "doubtfully distinct from *U. e. epops*." Five of these come within the scope of my studies: nominate *epops*, *major*, *senegalensis*, *orientalis*, and *saturata*. I believe, however, it is sufficient to recognize only four of these, synonymizing *orientalis* with nominate *epops*. The material that I have seen shows also that an additional race (*waibeli*) should be recognized in Africa in the zone north of the equatorial forest from Cameroons to northern Kenya. The four Palearctic races are discussed below, with a note on *waibeli* and *africana*.

1. *Upupa epops epops* Linnaeus, 1758, type locality, Sweden, with *orientalis* Baker, 1921, type locality, Ambala, eastern Punjab, as a synonym. The nominate race breeds in the southeast as far as Afghanistan, northern Baluchistan, and northwestern India in Kashmir and the Punjab, perhaps as far east as Nepal. It is replaced in peninsular India and Ceylon by *ceylonensis*, a smaller, darker, and more richly colored race, with no white or less white on the longer feathers of the crest below the black tips. The two races intergrade in eastern Punjab, *orientalis* representing the intermediate populations. Whistler (in Whistler and Kinnear, 1935b, p. 28) states that *ceylonensis* ranges north to Etawah and Fatehgarh in southwestern United Provinces, and that "in the Punjab grading into the typical race begins. Punjab breeding birds are pale in colour, approaching the typical race, and in size they are small approaching *ceylonensis* . . . For this intermediate race—if it is worth recognition—we may use Stuart Baker's name *Upupa epops orientalis*." Five breeding males that Whistler measured from the Punjab had a wing length of 133–143.5, as against 131.5–138.5 in 11 from Bombay Presidency, and 120.5–134 in five males and females from Ceylon.

The specimens that I have seen are intermediate but show that *orientalis* is best synonymized with nominate *epops*, as these specimens are either identical to nominate *epops* in coloration or much more similar to it than they are to the richly colored *ceylonensis*. The wing length is intermediate, measuring 132–144 (139) in six adults, as against 137–139 (148) in 20 of nominate *epops* from Europe, and 120–138.5 in the specimens of *ceylonensis* measured by Whistler. The six adults were collected during the breeding season, one at Mussoorie, and the others in the eastern Punjab, including two from Ambala, the type locality of *orientalis*. Breeding specimens from Kashmir, Rawalpindi in northwestern Punjab, and eastern Afghanistan are identical with nominate *epops*.

2. *Upupa epops saturata* Lönnerberg, 1909, type locality, Kyakhta, southern Transbaikalia. The populations of eastern Asia which breed

from Siberia east of the Ob and Yenisei, Transbaicalia, and Amurland southward through China to Yunnan, Tibet, and the eastern Himalayas are distinctly darker on the mantle than nominate *epops*, being neutral gray-brown or less pinkish brown, and are also slightly grayer, less pinkish, on the throat and breast. They are called *saturata*, a name that was based on three specimens collected at Kyakhta on May 13–20, 1908. These three specimens correspond to the diagnosis I have given, a diagnosis that I have based on a very large series of specimens collected during the breeding season in Amurland, Korea, Manchuria, and various regions of China south to southern and northern Yunnan, Tibet, and Bhutan, and also on migrants, including some from Japan. With very few exceptions, amounting to less than 10 per cent, these specimens can be distinguished from nominate *epops*, most of them quite easily.

It is evident that a distinct race inhabits eastern Asia, but the validity of *saturata* has been denied by many authors, whose findings are nevertheless sharply contradicted by the material I have seen. Stegmann (1929, p. 178) states that some individuals from Transbaicalia are dark "*zwar recht dunkel*," but that the majority of the specimens cannot be distinguished from the birds of Europe and western Siberia. He therefore synonymized *saturata* with nominate *epops*, as he did again (1930, p. 439) in his study of the birds of Amurland. Kozlova (1932, p. 589) states, "I am unable to distinguish the Transbaikalian and Mongolian Hoopoes from European specimens, from which they differ in no constant way, and cannot, therefore, recognize the race *saturata*." Stresemann (1924, p. 33) states that one specimen from southern Manchuria and a series from Szechwan cannot be distinguished from nominate *epops*. Meise (1934, p. 49) agrees with Stresemann as far as the birds of Manchuria are concerned, but he apparently does not deny the validity of *saturata*, as he states that one of the paratypes of the latter that he has examined is darker than his specimens from Manchuria. The birds collected by Beick in eastern Tsinghai near Kansu were identified as nominate *epops* by Meise (1938, p. 172), and Sudilovskaya has synonymized *saturata* with nominate *epops* in the handbook of the birds of the Soviet Union (1931, p. 538).

On the other hand, *saturata* has been recognized by many authors, but it seemed more relevant to mention the authors who deny its validity. I may mention, however, the most recent opinion which was supplied by Johansen (1955, p. 400) who states that *saturata* is clearly distinct from nominate *epops* and that its range extends westward in Siberia to the region between the upper Ob and the Yenisei. Hartert

and Steinbacher (1932-1938, p. 358) were quite correct in insisting that the eastern populations are darker and grayer than nominate *epops*, but, in view of the statements of Stegmann and Kozlova, it is unfortunate that *saturata* was described from Transbaicalia. However, dark birds really do occur in this region, as stated by Stegmann (1929, *loc. cit.*) and Meise (1934, *loc. cit.*), and the name *saturata* is too well known to be replaced by a new one that could be bestowed on a population from eastern Asia more constant in character than the population of Transbaicalia.

3. *Upupa epops major* C. L. Brehm, 1855, type locality, Egypt. This race is restricted to Egypt from the Suez Canal west to Alexandria and the Nile Valley, including El Faiyum south to Wadi Halfa. It is not sharply differentiated from nominate *epops* but averages duller throughout and is usually less white on the abdomen and inner secondaries; the abdomen is slightly more streaked with brown on an average, and the secondaries are more buffy, the white band in the tail averaging also slightly narrower. The bill averages longer and higher at the base, measuring in nine males 49-61 (55) in length from the nostril to the tip, and 8-9 (8.4) in height at the level of the nostril, as against 45-52 (48), and 6.5-8 (7.1) in 15 of nominate *epops*.

4. *Upupa epops senegalensis* Swainson, 1837, type locality, Senegal. This race differs from the preceding one by being much whiter on the wing, on the greater upper wing coverts and inner secondaries, by being more rufous on the head, mantle, and under parts, and by having a narrower band of white on the longer feathers of the crest, this band being only faintly indicated in some individuals. It is smaller than nominate *epops*, 10 males having a wing length of 131-141 (135.8), as against 138-159 (149) in 15 of nominate *epops*. *Senegalensis* is not migratory and inhabits the dry belt south of the Sahara from Senegal eastward to the Sudan, Abyssinia, and Somaliland, north to the Air and Ennedi Mountains in the Sahara.

Farther south, *senegalensis* is replaced by *waibeli* Reichenow, 1913, type locality, Bamuga near Tchang, Cameroons. The latter is not Palearctic, as it inhabits the zone north of the equatorial forest, but is briefly discussed here as, hitherto, *waibeli* has been considered to be a synonym of *senegalensis*. However, the populations ranging from the Cameroons eastward through northern Belgian Congo to Uganda and northern Kenya are very considerably darker than *senegalensis*. They are barred with white across the primaries, as in all the races of *epops* except *africana* in which the primaries are all black, but their coloration is intermediate otherwise between that of *senegalensis* and that of

the very dark rufous brown *africana*. They are also somewhat larger, the wing length of nine males of *waibeli* measuring 133–146 (140).

The breeding ranges of *waibeli* and *africana* in east Africa require further study, as both forms occur in Uganda and Kenya. They are partly migratory in these regions, but if they are found to be sympatric during the breeding season, *africana* may represent a separate species, as it is considered to be by Sclater (1924, p. 232), and Chapin (1939, pp. 334–338). Chapin stated that he treated *africana* as a separate species because it “lacks the white bar across the primaries and is not known to interbreed with the more northern form.” However, I have examined two specimens that suggest that *epops* and *africana* are not perfectly isolated reproductively. In these two specimens, which appear to be hybrids, the long outer primaries from the second to the fifth are all black as in *africana*, but the sixth to the eighth are irregularly spotted with white at the level of the white bar in *epops*. These two specimens were collected in Kenya, one at Barsaloi on October 23, and the other 4 miles north of the quarantine station in the Kidong Valley on June 6. The fact that the coloration of the body plumage of *waibeli* is also very clearly intermediate between that of *epops* and that of *africana* suggests also that the two forms are probably conspecific.

To investigate this question thoroughly would lead too far from my study of the Palearctic birds, but I list my records to serve for further investigation. In addition to the two hybrids, I have examined a specimen of *waibeli* from Marsamusi near Marsabit in northern Kenya that was collected on August 16, and one taken at Kampala, Uganda, on November 24. In connection with this last record, Pitman (1950) reported that “*senegalensis*” [i.e., *waibeli*] breeds freely near Kampala and Entebbe during December, January, and February. Pitman had mentioned this also in a letter he wrote to Dr. Chapin on February 12, 1941, with the additional information that *africana* migrated through this region in June and July. Chapin (*loc. cit.*) states that “*senegalensis*” occurs occasionally at Nairobi in Kenya, and *africana* in “Kenya Colony, and occasionally to southern Abyssinia.” The specimens of *africana* from Uganda and Kenya in the collection of the American Museum of Natural History are from: Uganda, Kariandus, November 28; Kenya, Kituni, February 18; Mau, December 8; Nairobi, March 15, July 23, October 25, and December 20; Bibi Camp, July 3; Simba, May 12 and October 15; Tsavo, March 27; and Quarantine Station, Kidong Valley, June 4–6.

I would like to express my appreciation to Drs. J. P. Chapin and F. Salomonsen who have kindly discussed with me some of the ma-

terial examined. Dr. Chapin agrees that the name of the series he collected in the Uelle district of the Belgian Congo and identified as *senegalensis* in 1939 (*loc. cit.*) should be corrected to *waibeli*.

APOPIDAE

Apus pallidus

The Pallid Swift ranges from Madeira, the Canaries, northwestern Africa south to northern Mauritania, the coastal regions of the Mediterranean and some of its islands, and the Sahara eastward through Egypt and the Near East to Iraq, southern Iran, and southern Baluchistan. These populations are divided into three subspecies which differ slightly in coloration and size: *brehmorum* Hartert, 1901, type locality, Madeira; *illyricus* Tschusi, 1907, type locality, Dalmatia; and nominate *pallidus* Shelley, 1870, type locality, Egypt. The last-named, which ranges from the Sahara (see below) and Egypt eastward, is paler and averages smaller than *brehmorum* and *illyricus* which are similar in size. The latter differs from *brehmorum* only by being slightly darker and is a poorly differentiated race, restricted perhaps only to the coast of Croatia and Dalmatia, *brehmorum* inhabiting the rest of the Mediterranean basin, northwest Africa, the Canaries, and Madeira. It is possible that *illyricus* breeds also in Greece and Cyprus, but the subspecific status of the birds from these regions is unknown, and I have seen no specimens. The species probably breeds in Greece, where it is said to occur from April to August but to be very rare; little is known from Cyprus where the bird has been reported from March to May.

The specific status of two other forms that are not Palearctic is uncertain, but they are probably best assigned to *A. pallidus*, as suggested by Lack (1956). These are *niansae* Reichenow, 1887, type locality, Lake Victoria, and *somalicus* Stephenson Clarke, 1919, type locality, British Somaliland. The latter is known to breed only in Somaliland, and *niansae* has been collected in Abyssinia, Eritrea, Kenya, and northern Tanganyika. The question of the true affinities of *niansae* and *somalicus* is very difficult and has been discussed by several authors, with little agreement. Lack reviews the various opinions and combines the two "provisionally" with *A. pallidus* with the reservation that they may represent a separate species.

Among the Palearctic populations, the subspecific status of those of the Sahara has caused Hartert much hesitation. He has discussed them on several occasions and his final decision (1924, p. 27) was to designate them by the formula *Apus pallidus pallidus* > *brehmorum*. However,

after examining Hartert's material, I believe they should be called nominate *pallidus* without hesitation. A series of 19 specimens collected during the breeding season, two of them in the northern Sahara (one near Guerrara and the other at Eli Alia, 80 kilometers south of Touggourt), one from the Ahaggar in the central Sahara, and 16 from the Aïr in the northern Sahara, vary somewhat individually but are much more similar to nominate *pallidus* in coloration and average size than they are to *brehmorum*. They differ from nominate *pallidus* only by averaging slightly darker. The males from the Sahara have a wing length of 160, 161, 162, 165, 166, 169, 170, 170, 174, (166.3), and these measurements are similar to those of topotypical nominate *pallidus*, six males from Egypt measuring 164, 164, 165, 165, 166, 170 (165.7), but smaller than those of *brehmorum*, 14 males of the latter measuring 168, 168, 169, 170, 170, 172, 172, 173, 173, 175, 175, 175, 176, 180 (172.6). Among the latter, four males from Madeira, which include the type, measure 168, 170, 175, 180 (173.2).

The two races replace each other in the southern foothills of the Saharian Atlas but not abruptly so, as four specimens from the region of Biskra, though distinctly paler than the dark birds from coastal Algeria, are more similar to them than they are to those of the Sahara. The wing length of the birds from Biskra is about intermediate, four adults measuring 167, 169, 171, 172 (169.8) as against 169, 171, 175, 176 (173.4) in specimens from coastal Algeria.

Hall and Goodwin (1954, pp. 466-467) state that among the four specimens collected by Stanford in Cyrenaica from April 1 to 6, one is very pale, paler than any other specimen of the species that they have examined, and the other three are similar to *brehmorum* from the Canaries. The five specimens that Hartert collected in Cyrenaica from May 6 to 12 are all dark and identical with topotypical *brehmorum* from Madeira. Hartert (1923a, p. 22) stated that he did not believe the species breeds in Cyrenaica, but Stanford (1954, p. 466) stated that he had "little doubt" that it does.

The race of the Balearic Islands is *brehmorum*, as shown by five specimens collected on Formentera from June 18 to 21, not *illyricus* as stated by Hartert (1912, p. 840).

Apus pacificus

The White-rumped Swift breeds from western Siberia eastward to Kamchatka, China, and Japan, and southward through China to southern Tibet, Formosa, the Indo-Chinese countries, and Malay Peninsula, the outer Himalayas, and the Khasia Hills in Assam. It varies geo-

graphically, and four races (nominate *pacificus*, *kanoi*, *leuconyx*, and *cooki*) can be recognized which differ in coloration, size, and the length of the outer primaries. David Lack (1956) believes, however, that the related *Apus acuticaudatus* is conspecific with *A. pacificus*, and has also described an additional white-rumped race (*sálimalii*) from southeastern Tibet, but, in my opinion, the last-named is not valid and is a synonym of *kanoi*, and *acuticaudatus* is a distinct species. The four races of *pacificus* are briefly reviewed below, and a discussion of the relationships of *acuticaudatus* is given.

1. *Apus pacificus pacificus* Latham, 1801, type locality, New South Wales, with *kurodae* Domaniewski, 1933, type locality, Japan, as a synonym. The nominate race ranges from Siberia eastward to Kamchatka, the Kuriles, Japan, and northern China. The population of Japan was named *kurodae* by Domaniewski who stated that it was darker than the birds of the continent, but I agree with Austin (1953, p. 479) that *kurodae* is probably invalid, as skins of comparative age and in the same stage of plumage from Japan and Siberia are identical. Austin (*loc. cit.*) and the authors of the third edition of "A hand-list of the Japanese birds" (Ornithological Society of Japan, 1942) consider that *kurodae* is a synonym of nominate *pacificus*, but the authors of the fourth edition of this list (Ornithological Society of Japan, 1958) have recognized *kurodae*, following Yamashina (1942, p. 79).

2. *Apus pacificus kanoi* Yamashina (1942, *loc. cit.*), type locality, Botel Tobago Island, southeast of Formosa, with *sálimalii* Lack (1958, p. 160), type locality, Molo, Chu Valley, "SE Tibet" [but equals southwestern Sikang] as a synonym. This race does not differ sharply from nominate *pacificus* but is darker and can be distinguished from it by several characters. It is more blackish, less brownish, more distinctly glossed, and shows little or virtually no contrast between the colors of the head and nape and the color of the mantle, whereas the head and nape are paler than the back in nominate *pacificus*. The pale apical fringes of the feathers are less conspicuous as a rule and may be obsolescent or absent on the back, the white band on the rump averages about 5 mm. narrower, and the white area of the throat is usually more restricted and less pure. The dusky shaft streaks on the throat and rump, though few and narrow, show also a tendency to be better indicated than in nominate *pacificus*.

Deignan (1956) has shown that *kanoi* is not restricted to Formosa and the small islands to the southeast, as believed by Yamashina, but inhabits also western Szechwan and Fukien. This is confirmed by

specimens that I have examined that were collected in May and June in Fukien. In fact, *kanoi* probably breeds throughout central, western, and southern China, as two specimens that I have seen that were collected on July 20, 1905, in the Tsinling Range in southern Shensi, and five from southwestern Sikang, match my specimens from Formosa and Fukien. The five consist of the specimens that Ludlow collected in "southeastern Tibet," four at Molo and Nanda in June and August, which he reported in 1944 (p. 372), and one at Pasum Tso in Kongbo on July 17, which he reported in 1951 (p. 572). These five birds were described as *salimalii* by Lack who remarked quite correctly that they were similar to nominate *pacificus* in size but extremely similar to *leuconyx* in coloration. However, Lack failed to compare them to *kanoi*, which he did not mention, being unaware, apparently, that Deignan had shown that the range of the latter extended far into China, to western Szechwan.

The breeding ranges of *kanoi* and nominate *pacificus* in China require further study. The specimens that I have seen that were collected during the breeding season show that nominate *pacificus* breeds at least as far south as Hopeh and Shantung, but that it is replaced by *kanoi* in southern Shensi. I have not seen specimens from Tsinghai, Kansu, and the Ala Shan, the populations of which are reported to be nominate *pacificus*, but, as these reports were published before *kanoi* was described, I believe material from these regions should be reexamined.

The wing length is similar in nominate *pacificus* and *kanoi*, and the second primary is longer than the first. The wing length measures:

Nominate *pacificus*, males, 175, 177, 178, 179, 181, 181, 184, 185, 186, 189 (181.5); females, 171, 176, 176, 178, 178, 178, 178, 180 (176.9). *Kanoi*, males (not including specimens from "southeastern Tibet"), 176, 178, 179, 180, 180, 182, 183, 184, 186, 188 (181.6); females, 173, 173, 175, 178, 182, 185 (177.6); males from "southeastern Tibet," 177, 178, 179, 180, 182 (179).

3. *Apus pacificus leuconyx* Blyth, 1845, type locality, Deccan, India. This race is similar to *kanoi* in coloration but is smaller, four males measuring 155, 155, 160, 171 (160.2) and five females 159, 160, 160, 162.5, 164.5 (161). The second primary is longest, as in *kanoi* and nominate *pacificus*. The breeding range is along the outer Himalayas from Murree to Assam and also the Khasia Hills. It seems to be found chiefly below 6000 feet, but I have seen a specimen that was collected on May 21, 1913, at 8000 feet at Lohajung, Garhwal, and another collected on May 26, 1921, at 10,500 feet at Khoksar in the Chandra Valley in Lahul, a region where the avifauna is very predominantly

Paleartic in character. This last specimen was shot from a flock by Whistler who states (1925, p. 194) that he saw also a single bird on June 28 that was flying across the summit of the Rhotang Pass from Lahul into Kulu. The lowest point on the pass is 13,000 feet, and Khoksar is at the foot of this pass on the north side of the range. Whistler states that *leuconyx* "apparently" does not breed in Lahul, but the dates at which he collected and observed it, together with the fact that flocks occur in Lahul, suggest that it may breed in this region.

4. *Apus pacificus cooki* Harington, 1913, type locality, Goteik Caves, Northern Shan States, Burma. This race is darker, more glossy, than the preceding one, and has darker and broader shaft streaks on the throat. Its wing length is longer than that of *leuconyx* but shorter than that of *kanoi* and nominate *pacificus*, five males measuring 170, 174, 177, 178, 180 (175.8). It differs from the other three by having the first primary equal to or slightly longer than the second. The breeding range is not very well known but appears to consist of the Shan States, Siam, including the peninsula, and Indochina. Among the material that I have seen is a series collected on January 11, 1930, in the cliffs of the Bay of Along in Tonkin.

Apus pacificus AND *Apus acuticaudatus*

David Lack (1956) considers that these two swifts are conspecific, but, in my opinion, it is highly probable that they are separate species. Lack's arguments are that their breeding ranges do not actually overlap in the Khasia Hills, and that *A. p. cooki* "completely bridges the [morphological] gap between *A. p. pacificus* and *A. acuticaudatus*." However, *cooki* shares with the other races of *pacificus* two important characters through which it differs most conspicuously from *acuticaudatus*, a white rather than a black rump, and much less attenuated outer tail feathers (fig. 1), a structural character that was overlooked by Lack. The only points of similarity between *cooki* and *acuticaudatus* are a similar wing length, a long first primary, glossy plumage, and a heavily streaked throat, but these may represent instances of convergent adaptation, as the two birds inhabit similar regions and are not migratory though they move locally. More weight should be given, I believe, to the alternate difference in the color of the rump (white versus black) and the shape of the tail feathers, as these characters appear to be of specific importance in swifts.

Lack states that the white band on the rump is narrower in *cooki* than in nominate *pacificus* and shows dark shaft streaks, but this is

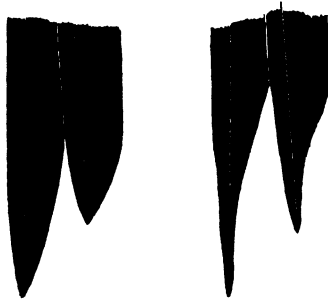


FIG. 1. Shape of the tips of the two outer tail feathers in adults of *Apus pacificus* (left) and *Apus acuticaudatus* (right).

true also of *leuconyx* and *kanoi*. He believes that the black rump of *acuticaudatus* can be accounted for by the fact that it breeds at Cherrapunji, a place that is credited as being the wettest in the world, but *acuticaudatus* inhabits also the Lushai Hills, where it has been discovered recently by Koelz (1954, p. 26), a region where the rainfall is much lower than at Cherrapunji but similar to that in other regions inhabited by the white-rumped *leuconyx* and *cooki*.

As far as the distribution is concerned, *leuconyx* breeds at Shillong, only 30 miles from Cherrapunji, a distance that does not seem to be a very convincing proof of lack of overlap where such large and powerful swifts are concerned. It is possible also that *acuticaudatus* will be rediscovered in the Himalayas (or within the range of *leuconyx*), as its type locality is Nepal. One may add that apparently the two species select different nesting sites in the Khasia Hills. According to Stuart Baker (1934, pp. 452-456), *leuconyx* breeds in deep narrow crevices, whereas the nests of *acuticaudatus* are built usually on ledges.

Apus melba

The Alpine Swift is widely distributed from southern Europe and northwest Africa to Russian Turkestan, India south to Ceylon, and in eastern and southern Africa. Four or five races are Ethiopian, one (*bakeri*) seems best restricted to Ceylon, as discussed below, two are Palearctic, and another (*nubifuga*) inhabits India, ranging north to the Himalayas. The two races that are exclusively Palearctic are nominate *melba* Linnaeus, 1758, type locality, Gibraltar, and *tuneti* Tschusi, 1904, type locality, Tunis. The former is darker than *tuneti* and breeds from southern Europe eastward to the Caucasus and northern Iran, *tuneti* breeding in the more arid regions to the south from northwest Africa and the Near East to Turkestan, Afghanistan, and northern

Baluchistan. The Indian race has been described recently by Koelz (1954, p. 25), who named it *nubifuga*, the type locality being Rathi, Kumaon. The present note is concerned with the populations of India and Ceylon.

The Alpine Swift occurs and probably breeds in many regions of India, but actual breeding records have been reported so far only from Dungagali near Murree, from some unspecified locality in Kashmir, Nasik in northern Bombay, and Gersoppa Falls in southern Bombay, in addition to the hills of Ceylon. Prior to the description of *nubifuga*, the birds of northern India were called nominate *melba*, while those from Raipur in central India and Belgaum in southern Bombay southward were called *bakeri* (see Whistler, in Whistler and Kinnear, 1935b, p. 29). *Bakeri* was described by Hartert (1928, p. 363) from Ceylon. However, the birds of Ceylon are darker than those of India, and, judging by the only specimen that I have seen, which is the type of *bakeri*, have a narrower band of brown across the breast. They are also smaller (see below) than the birds of northern India but similar in size to those of southern India. The birds of India (*nubifuga*) are smaller than nominate *melba*, especially in southern India, and, though quite similar to nominate *melba* in general coloration, have a broader band of brown across the breast on an average and the white patch of the throat usually more restricted.

We may recall that Hartert (1928, *loc. cit.*) mentioned that the four specimens he had seen from Ceylon were dark and that he believed that *bakeri* was probably replaced by a paler though unnamed race in India. Whistler (1944, p. 230) has emphasized also that the birds of Ceylon are darker than those of India: "The two Ceylon specimens that I have examined were very dark indeed even as compared with the few South Indian birds available and very close in colour to *M. m. africana*. It is most desirable to procure a series of Ceylonese birds and verify their exact affinities." However, Mr. Derek Godwin, who has examined for me these two birds, which were collected in the Oya Valley on August 15, 1952, and at some unspecified date and locality in 1876, states that they are only "a little darker than most Indian specimens in comparative plumage." They can be matched by some individuals from India, for instance, by a female collected in July in Nepal Terai, and he adds, "I can see no constant difference in width of breast band." The type bears no date other than "1866," and Hartert did not mention the dates of his other three specimens. One cannot assume that the type of *bakeri*, as well as the additional specimens from Ceylon, was a local bird, but these are all dark (though

opinions may vary as to the degree of saturation), and no pale specimen has been collected until now in Ceylon. It seems reasonable, therefore, to restrict the range of *bakeri* to Ceylon.

The Indian race (*nubifuga*) is not very satisfactory, but, in my opinion, the specimens that I have seen from northern India are not nominate *melba*, from which they are very widely separated by the range of *tuneti*; while those that I have seen from the south (Mysore), though similar in size to *bakeri*, are similar to the birds from the north in coloration and are much paler than the type of *bakeri*. (See also the remark of Whistler quoted above about the coloration of the birds of southern India.) Under the circumstances, the most satisfactory solution seems to be to call all the populations of India by the name *rubifuga*.

The measurements listed below are not very satisfactory, because, with the exceptions of the series from Europe and the two birds reported by Abdulali, we cannot be certain that they were local birds. However, no better material is available, and they do indicate the trend in variation. About half of the birds were measured by me and the other measurements were supplied to me by Mr. Goodwin from the collection of the British Museum.

The measurements of the length of the wing follow:

Nominate *melba* from Europe: Males, 215, 216, 217, 219, 223, 225, 225, 227, 230, 232 (222.9); females, 212, 215, 217, 218, 219 (216.2).

Apus melba nubifuga: Northern Punjab and Mussoorie, males, 208, 212, 214, 217, 221; females, 209, 217, 219, 223. Kumaon, females, 204, 205 (type of *nubifuga*, *fide* Koelz), 215. Central India, male, 215, female, 212. Northern Bombay Presidency, females, 218, 218. Southern Bombay Presidency, Gersoppa Falls, male, 204, female, 200, according to Abdulali (1936, p. 829). Mysore, males, 203, 204; females, 202, 205. Southern Madras (Coonoor), male, 196, female, 205, unsexed, 212. Travancore, male, 207.

Apus melba bakeri: Ceylon, female, 199; unsexed, 205, and 207 (the type of *bakeri*).

The range of measurements (with averages in parentheses) is as follows:

Northern India, including northern Bombay: seven males, 208–221 (214.6); nine females, 204–223 (214.2).

Southern India, including Gersoppa Falls, Mysore, Coonoor, and Travancore: Five males, 196–207 (202.8); four females, 200–205 (203).

LITERATURE CITED

ABDULALI, HUMAYUN

1936. A note on the Alpine swifts (*Micropus melba bakeri* Hartert) at Gersoppa. Jour. Bombay Nat. Hist. Soc., vol. 38, pp. 829–830.

ANDERSON, JOHN

- "1878" [1879]. Anatomical and zoological researches: comprising an account of the zoological results of the two expeditions to western Yunnan in 1868 and 1875. London, Quaritch, vol. 1, xxv+984 pp.

AUSTIN, OLIVER L.

1953. In Austin, Oliver L., and Nagahisa Kuroda, The birds of Japan their status and distribution. Bull. Mus. Comp. Zoöl., vol. 109, pp. 279-637.

BAKER, E. C. STUART

1934. The nidification of birds of the Indian Empire. London, Taylor and Francis, vol. 3.

BANGS, OUTRAM, AND JOSSELYN VAN TYNE

1931. Birds of the Kelley-Roosevelts Expedition to French Indo-China. Publ. Field Mus. Nat. Hist., zool. ser., vol. 18, pp. 33-119.

BATES, G. L.

1935. [No title.] Bull. Brit. Ornith. Club, vol. 56, pp. 9-10.

VON BOETTICHER, H.

1951. La systématique des guêpiers. L'Oiseau, pp. 194-199.

CHAPIN, JAMES P.

1939. The birds of the Belgian Congo, pt. 2. Bull. Amer. Mus. Nat. Hist., vol. 75, pp. i-vii, 1-652.

DEIGNAN, H. G.

1956. Eastern races of the White-rumped Swift, *Apus pacificus* (Latham). Bull. Raffles Mus., no. 27, 147-149.

GUICHARD, K. M., AND D. GOODWIN

1952. Notes on birds collected and observed in Oman and the Hadhramaut. Ibis, pp. 294-305.

HALL, B. P., AND D. GOODWIN

1954. In Stanford, J. K., A survey of the ornithology of northern Libya. Ibis, pp. 449-473.

HARTERT, ERNST

1910. The birds of Hainan. Novitates Zool., vol. 17, pp. 189-254.
1912. Die Vögel der paläarktischen Fauna. Berlin, Friedländer und Sohn.
1921. Captain Angus Buchanan's Air expedition. Novitates Zool., vol. 28, pp. 78-141.
1923a. On the birds of Cyrenaica. *Ibid.*, vol. 30, pp. 1-32.
1923b. The hitherto known birds of Morocco. *Ibid.*, vol. 30, pp. 91-146.
1924. Ornithological results of Captain Buchanan's second Sahara expedition. *Ibid.*, vol. 31, pp. 1-48.
1928. A rush through Tunisia, Algeria, and Morocco, and collecting in the Moroccan Atlas, in 1927. *Ibid.*, vol. 34, pp. 337-371.

HARTERT, ERNST, AND FRIEDRICH STEINBACHER

- 1952-1938. Die Vögel der paläarktischen Fauna, Ergänzungsband. Berlin, Friedländer und Sohn.

JOHANSEN, HANS

1955. Die Vogelfauna Westsibiriens, Teil 3, Pici-Cuculi. Jour. Ornith., vol. 96, pp. 382-410.

KOELZ, WALTER N.

1939. New birds from Asia, chiefly from India. *Proc. Biol. Soc. Washington*, vol. 52, pp. 61-82.

1954. New birds from Iran, Afghanistan, and India. *Contrib. Inst. Regional Explor.*, no. 1, pp. 1-32.

KOZLOVA, E. V.

1932. The birds of south-west Transbaikalia, northern Mongolia, and central Gobi, pt. 3. *Ibis*, pp. 567-596.

LACK, DAVID

1956. The species of *Apus*. *Ibis*, pp. 34-62.

1958. A new race of the Whiterumped Swift. *Jour. Bombay Nat. Hist. Soc.*, vol. 55, pp. 160-161.

LUDLOW, FRANK

1944. The birds of south-eastern Tibet [pt. 3]. *Ibis*, pp. 348-389.

1951. The birds of Kongbo and Pome, south-east Tibet. *Ibid.*, pp. 547-578.

MACKWORTH-PRAED, C. W., AND C. H. B. GRANT

1952. Birds of eastern and north eastern Africa. London, Longmans, Green and Co.

MARIEN, DANIEL

1950. Notes on some Asiatic Meropidae (birds). *Jour. Bombay Nat. Hist. Soc.*, vol. 49, pp. 151-164.

MEINERTZHAGEN, RICHARD

1954. Birds of Arabia. Edinburgh and London, Oliver and Boyd.

MEISE, WILHELM

1934. Die Vogelwelt der Mandschurei. *Abhandl. Ber. Mus. Dresden*, vol. 18, no. 2, pp. 1-86.

1938. In Stresemann, E., W. Meise, and M. Schönwetter, *Aves Beickianae* (Schluss). *Jour. Ornith.*, vol. 86, pp. 171-221.

NIETHAMMER, GÜNTHER

1955. Zur Vogelwelt des Ennedi-Gebirges (Französisch Äquatorial-Afrika). *Bonner Zool. Beitr.*, vol. 6, pp. 29-80.

ORNITHOLOGICAL SOCIETY OF JAPAN

1942. A hand-list of the Japanese birds. Third and revised edition. Tokyo.

1958. [Same title.] Fourth and revised edition. Tokyo.

PETERS, JAMES LEE

1945. Check-list of birds of the world. Cambridge, Harvard University Press, vol. 5.

[PITMAN, C. R. S.]

1950. Annual report of the game department [of the Uganda Protectorate] for the year ended 31st December, 1949. Entebbe, Uganda.

ROTHSCHILD, LORD

1926. On the avifauna of Yunnan, with critical notes. *Novitates Zool.*, vol. 33, pp. 189-343.

DE SCHAUENSEE, R. M., AND S. D. RIPLEY

1953. Birds of Oman and Muscat. *Proc. Acad. Nat. Sci. Philadelphia*, vol. 105, pp. 71-90.

SCLATER, W. L.

1917. The birds of Yemen, south-western Arabia, with an account of his

- journey thither by the collector, Mr. G. Wyman Bury. *Ibis*, pp. 129–186.
1924. *Systema avium Ethiopiarum*. London, British Ornithologists' Union.
- STANFORD, J. K.
1954. A survey of the ornithology of northern Libya. *Ibis*, pp. 449–473.
- STEGMANN, B.
1929. Die Vögel Süd-Ost Transbaikaliens. *Ann. Mus. Zool. Acad. Sci. U.R.S.S.*, vol. 29, pp. 83–242.
1930. Die Vögel des dauro-mandschurischen Uebergangsgebietes. *Jour. für Ornith.*, vol. 78, pp. 389–471.
- STRESEMANN, ERWIN
1924. Zoologische Ergebnisse der Walter Stötznerschen Expeditionen nach Szetschwan, Osttibet und Tschili, Passeres und Picariae, I. Abhandl. *Ber. Mus. Dresden*, vol. 16, no. 2, pp. 7–35.
1954. Hemprich und Ehrenberg, Reisen . . . aus den Jahren 1819–1826. Abhandl. *Deutschen Akad. Wiss. Berlin, Math. und Naturwiss.*, no. 1, pp. 1–177.
- SUDILOVSKAYA, A. M.
1951. In Dementiev, G. P., and Gladkov, N. A. (eds.), *Ptitsy Sovetskogo Soiuza*. Moscow, *Sovietskaya Nauka*, vol. 1.
- WHISTLER, HUGH
1925. The birds of Lahul, N. W. Himalayas. *Ibis*, pp. 152–208.
1944. The avifaunal survey of Ceylon. *Spolia Zeylanica*, vol. 23, pp. 119–321.
1945. Materials for the ornithology of Afghanistan, pt. 4. *Jour. Bombay Nat. Hist. Soc.*, vol. 45, pp. 280–302.
- WHISTLER, HUGH, AND N. B. KINNEAR
1935a. The Vernay scientific survey of the Eastern Ghats. Part X. *Jour. Bombay Nat. Hist. Soc.*, vol. 37, pp. 751–763.
1935b. The Vernay scientific survey of the Eastern Ghats. Part XI. *Ibid.*, vol. 38, pp. 26–40.
- YAMASHINA, Y.
1942. On a new subspecies of *Micropus pacificus* residing in Formosa and Botel Tobago. *Bull. Biogeogr. Soc. Japan*, vol. 12, no. 2, pp. 79–80.
- YEN, K. Y.
1933. Les oiseaux du Kwangsi, Chine (suite). *L'Oiseau*, pp. 615–638.

