

**Article XVII.—ON A COLLECTION OF BIRDS FROM  
CHAPADA, MATTO GROSSO, BRAZIL, MADE BY  
MR. H. H. SMITH.**

By JOEL ASAPH ALLEN.

**PART II.—TYRANNIDÆ.**

(Continued from Vol. III, p. 380.)

The present Part treats only of the family Tyrannidæ, which is represented by 45 species. In treating of *Myiarchus tyrannula*, reference is also made to its West Indian, Mexican and United States allies, at one time considered by several ornithologists of repute as merely subspecies of the *M. tyrannula* group.

Since the publication of Part I the Museum has purchased the remainder of the Smith Collection of Chapada birds (see this Bulletin, Vol. III, p. 337), thus increasing the number of duplicates available for exchange.<sup>1</sup>

**88. *Tænioptera nengeta* (Linn.).**—A series of 59 specimens, divided about equally between males and females, represents every month in the year except October, as follows: January, 4; February, 4; March, 7; April, 9; May, 5; June, 7; July, 4; August, 4; September, 2; October, 0; November, 6; December, 6.

The plumage in the November and December specimens is much faded and worn. The molt begins in December, and the new clothing plumage is pretty well acquired before the end of January, but the molt of the quills continues irregularly till into April. As a rule, however, March and April birds are in good condition, but the highest condition of plumage is seen in the May and June specimens. The females average a little smaller than the males, but there is no very appreciable difference in coloration. By August the plumage begins to show signs of deterioration. In old males the tips of the first and second primaries are more or less incised on the inner vane, but much less so than in some other species of the genus.

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<sup>1</sup> I have learned since the publication of Part I that the credit for gathering and preparing the collection is about equally due to Mrs. H. H. Smith and Mr. W. C. Smith, the latter preparing most of the birds collected during 1883-84.

A bird of the year; in first plumage, taken Dec. 19, has the white of the lower plumage tinged with pale buff, and the gray of the upper plumage with brownish, the rump and upper tail-coverts being decidedly brown; the tips of the wing-coverts are buffy white instead of grayish white.

The measurements of 10 adults of each sex are as follows: *Males*: wing, 5.02-5.68, averaging 5.39; tail, 3.20-3.76, averaging 3.58; culmen, .70-.82, averaging .76. *Females*: wing, 4.90-5.34, averaging 5.19; tail, 3.42-3.74, averaging 3.56; culmen, .70-.80, averaging .75.

**89. *Tænioptera velata* (Licht.).**—Three specimens—Cachoeira, ♂ ad., Feb. 4, 1886; Chapada, ♂ ad., Sept. 23, 1883, ♀ ad., Dec. 6, 1883.

**90. *Fluvicola albiventris* (Spix).**—One specimen, Corumba, March 24, 1886.

**91. *Arundinicola leucocephala* (Linn.).**—Four specimens, 2 males and 2 females, Corumba, March, 1886.

**92. *Alectrurus tricolor* Vieill.**—One specimen, ♂, June, 1883.

**93. *Cnipolegus comatus* (Licht.).**—Six specimens, 5 of which are males, taken as follows: January, 1; July, 1; August, 3; October, 1.

**94. *Copurus colonus* (Vieill.).**—Three specimens, November, 1882 and 1883. Two are adults and the other young, in the black plumage = *C. funebris* Cab. & Heine (Mus. Hein., II, 1859, p. 41).

**95. *Platyrrhynchus bifasciatus* Allen.**—As already stated (this Bulletin, II, No. 3, 1889, pp. 141, 142) this species is represented by 18 specimens, 11 males and 7 females, all from Chapada. The series having been already fully described (l. c.) further remarks are not necessary.

**96. *Todirostrum cinereum* (Linn.).**—The series of 13 specimens was collected as follows: Chapada, April (2 specimens) and August (5 specimens); Corumba, 6 specimens—February,

March, and April. Of these specimens 7 are sexed as males, 4 as females, and 2 are not marked for sex, but are doubtless females. In all there is a very narrow frontal band of yellow at the base of the bill, in some, however, scarcely discernable. The females are distinguishable from the males by a very small spot of white (sometimes yellowish white) on the middle of the crown, but apparently are not otherwise different from the males. There is, however, much variation in color and size, and especially in the size of the bill, but it is apparently individual and seasonal rather than sexual. The 7 males measure as follows: wing, 1.58-1.88, averaging 1.77; tail, 1.36-1.46, averaging 1.43; culmen, .52-.58, averaging .55. The 6 females measure; wing, 1.66-1.80, averaging 1.70; tail, 1.28-1.40, averaging 1.34; culmen, .52-.57, averaging .54.

**97. *Euscarthmus ochropterus* Allen.**—Chapada, 15 specimens. There is nothing to add to the description of this species already given (see this Bulletin, II, No. 3, June, 1889, pp. 143, 144).

**98. *Euscarthmus pelzelni* ScL.**—One specimen, Chapada, May 23, 1885.

**99. *Euscarthmus striaticollis* (Lafr.).**—Two specimens, Chapada, ♂ ad., Feb. 18; ♀ ad. (no date).

**100. *Hapalocercus meloryphus* (Wied).**—One specimen, Chapada, Aug. 25.

**101. *Habrura pectoralis* (Vieill.).**—Chapada, 10 specimens—May, 2; July, 2; August, 4; September, 2. These specimens have already been commented upon in a comparison between *H. pectoralis* and *H. superciliaris* (Wied). (See this Bulletin, II, No. 3, June, 1889, p. 146.)

**102. *Culicivora stenura* (Temm.).**—One specimen, Chapada, ♀ ad., April 13.

**103. *Serpophaga albogrisea* ScL. & Salv.**—Three specimens, taken as follows: Abrilongo, ♂ ad., Feb. 28; Chapada, ♂ ad., July 20; juv. in first plumage, Nov. 6. The young bird

is brown above, with each feather narrowly edged with whitish; below, throat and breast dark ashy brown, faintly cross-barred with darker brown; rest of lower parts whitish with a faint tinge of greenish buff; under wing-coverts greenish yellow; wings and tail dusky brown.

**104. *Leptopogon amaurocephalus* Cab.** — Chapada, 10 specimens, collected as follows: February, 2; May, 1; June, 2; August, 1; November, 4. There is apparently very little seasonal or sexual variation, the series being remarkably uniform as regards both size and coloration. In November specimens the cap is paler, and the wing-bars are pale yellowish instead of ochraceous, as in the birds in fresher plumage. One of the specimens has the cap but little darker than the back and the wing-bars yellowish, thus resembling closely the description of *L. tristis* of Sclater and Salvin from Bolivia.

Six males measure as follows: wing, 2.47–2.67, averaging 2.56; tail, 2.06–2.33, averaging 2.20; culmen, .47–.52, averaging .50. Three females measure as follows: wing, 2.40–2.45, averaging 2.42; tail, 2.07–2.09, averaging 2.08; culmen, .50–.52, averaging .50.

On comparison with Panama specimens of *L. pileatus* Cab., the differences prove to be almost inappreciable. The brown-headed group of this genus, embracing *L. amaurocephalus*, *L. pileatus* and *L. tristis*, apparently constitute a widely dispersed species, perhaps barely separable into two or three geographical subspecies, the Central American form standing as *L. a. pileatus*, and the Bolivian form, if really separable, as *L. a. tristis*.

**105. *Myiopatis semifusca* Scl.** — Chapada, 6 specimens — April, 2; May, 1; August, 1; September, 2. The abdomen varies in different specimens from silky grayish white, faintly tinged with greenish, to a deep tinge of pale sulphur yellow.

**106. *Ornithion cinerascens* (Wied) = *O. obsoletum* auct.** (See this Bulletin, II, No. 3, June, 1889, pp. 148, 149.)

This species is represented by 12 specimens, taken at Chapada, as follows: February, 1; March, 1; April, 1; May, 2; June, 3; July, 1; August, 2; September, 1.

These specimens vary much in both color and size, the males being much larger than the females, and the coloration varying greatly with season. The brightest colored specimen is a male taken Sept. 17; the palest is a female, taken July 6. In the former the head is ashy olivaceous brown, the back strong greenish olive, the rump distinctly browner; wing-bars rusty ochraceous; below, throat olivaceous gray; rest of lower parts strongly washed with yellowish olive; edge of wing pale ochraceous. In the July specimen the head is much darker, with a distinctly dusky cap, the back grayish brown faintly tinged with olive, the wing-bars grayish white faintly tinged with ochraceous basally; below, throat and breast dull gray with a slight olivaceous cast, rest of lower parts grayish white, lighter (nearly white) on the middle of the abdomen, and washed with pale yellowish olive on the flanks. Between these extremes is nearly every stage of intergradation, clearly due to various seasonal phases.

The following measurements of 12 specimens (3 males, 4 females, and 5 unmarked for sex) show the range of variation in size. Wing, 2.00-2.25, averaging 2.09; tail, 1.46-1.78, averaging 1.61; culmen, .25-.32, averaging .28. The females are apparently slightly smaller than the males.

As already noted (l. c.) the *Ornithion obsoletum* of modern writers is the *Hylophilus cinerascens* Wied, as shown by his types, still extant in this Museum.

**107. *Elænea pagana* (Licht.).**—Of the 112 specimens of the *E. pagana* group from Chapada, about 48 per cent. are referable to *E. pagana* proper, and 40 per cent. to *E. pagana albiceps*, while the remaining 12 per cent. are variously intermediate between the two forms. As this material has already been made the subject of a special paper (see this Bulletin, II, No. 3, Oct., 1889, pp. 183-208), further comment is here unnecessary. Every month in the year except June is represented by a considerable series of specimens, rendering it possible to trace the seasonal phases of coloration throughout the year.

**108. *Elænea pagana albiceps* (d'Orb. & Lafr.).**—See above under *E. pagana*.

**109. *Elænea gaimardi* (d'Orb.).**—Three specimens, taken respectively Feb. 19, June 10, 1885, and July 27, 1883. Apparently a rare species at Chapada.

**110. *Elænea viridicata* (Vieill.) = *E. placens* Scl.**—One specimen, April 2, 1883.

There seems to be no reason to question the pertinence of Vieillot's *Sylvia viridicata* to this species.

**111. *Elænea affinis* Burm.**—This species is represented by 8 specimens, taken as follows: February, 3; March, 1; May, 3; December, 1.

The February and March specimens, in fresh unworn plumage, are more olive on the back than the May specimens. The December specimen is in molt, about one-half of the plumage being worn and faded, with which is mixed the freshly acquired and more olive new plumage.

Besides this well-marked seasonal difference in coloration, there is a wide range of individual variation in size, and a most remarkable variation in the size and shape of the bill, to which latter attention has already been called. (See this Bulletin, II, No. 3, 1889, pp. 191 and 207, and figs. 9-12 and 9a-12a.)

The 8 specimens measure as follows: 3 *Males*: wing, 3.32-3.44, averaging 3.39; tail, 2.58-2.92, averaging 2.74; exposed culmen, .50-.60, averaging .54. 5 *Females*: wing, 3.12-3.30, averaging 3.23; tail, 2.60-2.85, averaging 2.69; exposed culmen, .40-.56, averaging .48. The females are thus much the larger.

**112. *Legatus albicollis* (Vieill.).**—One specimen, ♂, Oct. 20, 1882.

**113. *Sublegatus griseocularis* Scl. & Salv.**—Of the 9 specimens representing this species 1 was taken in January, 1 in February, 1 in March, 1 in May, and 5 in August. They present the usual amount of seasonal variation in color, and also vary greatly in size, the larger specimens closely approaching Venezuela specimens of *S. glaber* in length of wing, but the bill is always very much smaller.

The measurements of seven adult specimens range as follows: 5 *Males*, wing, 2.52-2.62, averaging 2.57; tail, 2.14-2.22, averaging

ing 2.20; exposed culmen, .26-.37, averaging .31; 2 *Females*, wing, 2.57-2.66, averaging 2.61; tail, 2.16-2.22, averaging 2.19; exposed culmen, .32.

**114. *Sublegatus virescens* Allen.**—The type and only known specimen of this species was taken at Chapada May 8, 1885. There is nothing to add to the description already given (this Bulletin, II, No. 3, 1889, p. 149).

**115. *Myiozetes cayennensis* (Linn.).**—The three specimens representing this species I am unable to distinguish from true *M. cayennensis* from northern South America and Panama. Two were taken in January, the other in August.

It may be mentioned in this connection that the type of *M. rufipennis* Lawr., from Venezuela, referred to *M. cayennensis* by Mr. Sclater (Cat. Bds. Brit. Mus., XIV, p. 160), is referable to *M. erythropterus*, with which it agrees perfectly in coloration.

**116. *Rhynchocyclus sulphurescens* (Spix).**—Represented by 6 specimens, taken as follows: ♀ ad., April 10; ♂ ad., May 2; ♀, Nov. 1; ♀ juv., Nov.; ♂ ad., Dec. 2.

In several of the specimens the auriculars are distinctly blackish posteriorly, in some cases forming a well-defined spot, mentioned as a feature of *R. peruvianus* Tacz.

NOTE.—Mr. Lawrence's *R. flavo-olivaceus* (Ann. New York Lyc. N. H., VIII, 1863, p. 8), of which the type is before me, represents the northern form of *R. sulphurescens*, and apparently may easily stand as a subspecies, under the name *R. sulphurescens flavo-olivaceus* (Lawr.). It is erroneously referred by Mr. Sclater (Cat. Bds. Brit. Mus., XIV, 1888, p. 169) to *R. cinereiceps*.

On the other hand, Mr. Lawrence's *R. marginatus* (Proc. Acad. Nat. Sci. Phila., 1868, p. 429), of which the two types are before me, is apparently a very distinct species, its nearest ally being *R. cinereiceps* Scl. Mr. Sclater erroneously refers it (l. c.) to *R. sulphurescens*, to which it is not at all closely related.

**117. *Pitangus derbianus bolivianus* (Lafr.).**—One specimen, ♂, Abrilongo, Feb. 23.

**118. *Sirystes sibilator* (Vieill.).**—Nine specimens, collected as follows: 1 in February, 3 in March, 1 in May, 1 in July, 1 in August, 1 in September, and 1 in October.

**119. *Myiodynastes solitarius* (Vieill.).**—The 5 specimens were taken, 1 in September, 2 in October, and 2 in November.

**120. *Megarhynchus pitangua* (Linn.).**—This species is represented by 10 specimens, taken as follows: March, 1; July, 2; September, 3; October, 1; November, 3.

One of the November specimens is a young bird in first plumage. It differs from the adult in having a much smaller bill, in lacking the concealed orange patch on the crown, in having the dorsal plumage brown (lacking the olive tinge of the adults), with all of the feathers broadly edged with pale rufous; and in the lower parts being clear pale sulphur yellow instead of deep yellow.

**121. *Hirundinea bellicosa* (Vieill.).**—Four specimens: December, 1; January, 2; July, 1.

**122. *Pyrocephalus rubineus* (Bodd.).**—This species is represented by 74 specimens, nearly all taken May to September inclusive. April is represented by 7 specimens and October by 2. No specimens were taken between Oct. 7 and April 10, and only 2 prior to April 22. It would thus seem that the species is absent from the vicinity of Chapada from early in October till early in April.

This species appears to undergo a double molt annually—a complete molt, probably in November and December, and a partial molt (the clothing plumage only) in May and June. This partial molt begins in April, and some males continue in mixed livery till September, the males probably not acquiring fully adult plumage till the second, and possibly not till the third year. The five males taken in April are all in the garb of the female, with here and there red feathers coming in on the crown, throat and breast; the crissum and lower flanks are orange red.

Of the May series of 10 males, 6 have partly acquired full breeding plumage, the crown being still more or less patched with brown, and the throat, breast and flanks streaked with whitish

and dark brown, the red, however, greatly prevailing. The others have merely here and there a red feather on the crown, throat and breast. Of the 7 June males, one (taken June 30) is very nearly in perfect breeding plumage, four others are in mixed plumage with the red prevailing, while the other two show only here and there red feathers.

Of the 8 July males, four are in full breeding dress, three are more or less mottled with remnants of the immature plumage, while the other has here and there a few red feathers. Of the 6 August males, five are in full breeding dress, and the sixth is in mixed plumage. Of the 8 September males six are in full breeding dress, one has the red feathers of the throat and breast streaked with blackish, and the other is in mixed plumage. The single October male is in full breeding plumage. It thus appears that even in July, August and September a small proportion of the males are in mixed dress, having only scattered patches of red, while another small proportion have the red crown still more or less mixed with brown, and many of the red feathers of the lower plumage edged with whitish and broadly centered with blackish. This serves to divide the males into three categories—adult males (comprising about two-thirds of all), males of the second year, and males of the preceding year.

The females also exhibit much variation. A few are nearly uniform below, presenting little or no buffy yellow, orange or red on the lower flanks and crissum; the greater number have these parts suffused with yellowish buff, while in a few others they are pale red or orange red. This variation may be due also to differences of age.

The measurements of 10 adult males (in full breeding dress) and 10 adult females range as follows: *Males*: wing, 2.96–3.07, averaging 3.02; tail, 2.10–2.20, averaging 2.15; culmen, .44–.50, averaging .47. *Females*: wing, 2.80–3.12, averaging 2.96; tail, 1.97–2.30, averaging 2.14; culmen, .41–.48, averaging .45.

*Pyrocephalus rubineus mexicanus*, from Mexico and the southern border of the United States, as is well known, is rather lighter in coloration, both above and below, and is commonly supposed to be rather smaller than the South American *P. rubineus*. This, however, proves to be erroneous, the South American bird being

the larger. For purpose of comparison I append measurements of 10 adult males and 5 adult females, from Pinal County, Arizona, collected by Mr. W. E. D. Scott. 10 *Males*: wing, 3.12-3.24, averaging 3.16; tail, 2.14-2.32, averaging 2.22; culmen, .42-.48, averaging .45. 5 *Females*: wing, 3.08-3.10, averaging 3.09; tail, 2.18-2.26, averaging 2.21; culmen, .44-.46, averaging .45. This shows an average difference of .14 of an inch in the length of the wing in 10 adult males of each form, respectively from Arizona and Southern Brazil, the *latter being the smaller*. Six specimens from Ecuador and Colombia average slightly larger than the Chapada birds.

**123. *Myiobius navius* (Bodd.).**—The 6 specimens representing this species were taken as follows: Abrilongo, February, 1; Chapada, 2 in July, 1 each in August, September and October. In all the concealed vertical crest is yellow; two are sexed as males, two as females, and the others are not marked for sex.

**124. *Empidochanes fuscatus* (Wied.).**(=*E. fuscatus* et *E. fringillarius* auct.)—The series of 25 specimens of this species were taken as follows: in May, 6; in June, 1; in July, 2; in September, 9; in October, 3; in November, 2; in December, 2. It presents a considerable range of both individual and seasonal variation in color. The May specimens, being in fresh unworn plumage, are of a deeper brown above, with a slight tinge of yellowish below, which in one specimen (taken May 12) is quite strong. In the September-December specimens the upper parts are much duller (more olivaceous) brown, and the faint yellowish wash on the lower parts has given place to a silky grayish white. The bill varies from nearly uniform dusky horn color (in some specimens nearly black) with the lower mandible usually a little lighter than the upper, to a much lighter brown, with the lower mandible light horn color, the basal half paling to a much lighter shade.

A young bird in first plumage (♂, Dec., 1882) differs from adults in having the upper plumage of a lighter, more rusty brown, with broader rusty edgings to the coverts and quills.

The present series of 25 specimens, all from the same locality, is not only far from uniform as regards coloration, but varies

widely in respect to measurements. The bill, as in Flycatchers generally, and especially in *Elænea*, *Ornithion*, *Empidonax*, and allied genera, is exceedingly variable in form (its variability in color has already been noted above). The two extremes might readily be referred to different genera, so far as the bill is concerned. In the one case the bill is short and very broad at the base, in the other it is very long, with the breadth at the base actually much less than in the short-billed phase. This wide difference, however, seems merely individual, since the other specimens show a complete intergradation between the extremes.

The following measurements show the large range of variation in size: 18 specimens: wing, 2.47–2.82, averaging 2.66; tail, 2.32–2.78, averaging 2.58; culmen, .48–.54, averaging .52. Very few of the specimens are marked as positively identified for sex, but so far as the evidence goes there appears to be no sexual difference in size.

From the foregoing I am led to doubt the distinctness of *E. fringillarius* Pelzeln from *E. fuscatus* Wied, the types of which latter are before me. The *E. arenaceus* (Scl. & Salv.) from Venezuela is apparently quite distinct from *E. fuscatus*.

### 125. *Empidonax bimaculatus* (d'Orb. & Lafr.).

*Muscicapa bimaculata* D'ORB. & LAFR. Syn. Av. (Mag. de Zool. 1837), p. 48; D'ORB. Voy. Ois. p. 320.

*Empidonax bimaculatus* SCL. Ibis, 1887, 65; Cat. Bds. Brit. Mus. XIV, 1888, p. 224.

*Empidochanes euleri* CAB. Journ. f. Orn. 1868, p. 195.

*Empidonax brunneus* RIDGW. Hist. N. Am. Bds. II, 1874, p. 263; Ibis, 1888, p. 463.

*Empidochanes argentina* CAB. Journ. f. Orn. 1868, p. 196.

This species is represented by 17 specimens, taken as follows: in January, 2; in February, 2; in March, 1; in April, 1; in May, 4; in July, 1; in September, 1; in October, 4; in November, 1. It is thus in all probability a resident bird.

The series presents the usual wide range of variation, in part seasonal and in part individual, with in addition much variation due to age. In freshly-molted birds the whole dorsal plumage is rufescent olive brown, with the head slightly darker; the lower surface is grayish white strongly tinged with pale sulphur

yellow, the breast strongly washed with olive; the wing-bars and the edging of the quills pale ochraceous. In worn plumage there is rather less olive, both above and below, and the wing-bars are paler. In young birds the whole dorsal surface is more rusty olive, with the head strong ochraceous brown; the coverts and quills are more broadly edged with ochraceous, and there is usually a distinct third wing-bar, formed by the rusty ochraceous tips of the least wing-coverts. Below the broad olive breast-band is somewhat brownish. This phase (represented by four specimens) appears to represent the *Empidochanes euleri* of Cabanis, while the more or less faded post-breeding specimens appear to represent his *Empidochanes argentinus*. My *Empidonax bolivianus* and *E. lawrencei* (= *Ochthaca flaviventris* Lawr.) belong to the same group, but appear clearly separable, so far as present material goes. (See this Bulletin, II, No. 3, pp. 86 and 150.)

The measurements of 11 adult specimens show the following range of variation: 6 *Males*: wing, 2.50-2.62, averaging 2.54; tail, 2.27-2.49, averaging 2.36; exposed culmen, .45-.50, averaging .49. 5 *Females*: wing, 2.36-2.52, averaging 2.45; tail, 2.20-2.43, averaging 2.29; exposed culmen, .44-.46, averaging .46. The females thus average considerably smaller than the males.

**126. *Myiarchus tyrannulus* (Müll.)** (*M. erythrocerus* Scl., and of many authors).—The 34 specimens representing this species indicate that it is a permanent resident at Chapada. They were collected as follows: in January, 1; February, 0; March, 2; April, 1; May, 5; June, 3; July, 8; August, 8; September, 3; October, 1; November, 0; December, 2.

The amount of rufous on the inner vane of the outer tail feather is very variable, ranging from none whatever to a border occupying from one-third to two-thirds of the width of the inner vane. Four specimens show none whatever, and there is much less than the usual amount on the inner vanes of all the other rectrices; two show only a trace of a faint tinge of rufous on the inner vane of the second feather, while all of the rectrices are without rufous on the apical third of the feather. In others there is only a faint trace of pale rufous along the edge of the basal third of the inner vane of the outer feather. In still

others it is of the usual width but very pale, sometimes becoming wholly obsolete towards the tip. The rufous margin of the inner vane of the rectrices thus varies not only greatly in extent but also in the depth of the rufous tint. Apparently the variation is purely individual, as young birds in first plumage present the same diversity in this respect as the adults.

In young birds the yellow and the gray is paler than in adults; the head, lower back and upper tail-coverts are rusty brown, decidedly in contrast with the back, and the quills of the wings and tail are more broadly edged with rusty.

There is the usual seasonal variation in color, due to wear and fading. The bill is brownish black, becoming often deep black, however, in the breeding season; it also varies greatly in respect to size and form. There is considerable variation in general size, but this is in large part sexual, as shown by the following measurements: 10 *Males*: wing, 3.56-3.82, averaging 3.67; tail, 3.20-3.58, averaging 3.36; exposed culmen, .70-.76, averaging .73. 8 *Females*: wing, 3.50-3.68, averaging 3.59; tail, 3.15-3.40, averaging 3.28; exposed culmen, .68-.76, averaging .72. *General average*, wing, 3.63; tail, 3.32; culmen, .72.

The relationship of the widely dispersed South American *M. tyrannulus* to certain closely allied West Indian, Central American and Mexican forms has been the subject of much comment, and and of much diversity of opinion among authors. As the large series of *M. tyrannulus* from Chapada affords a favorable basis for a renewed examination of the points at issue, I offer a short *résumé* of the subject based on a much larger amount of material than has previously been brought together.<sup>1</sup>

True *Myiarchus tyrannulus*, it may be premised, is not known from Central America, while *M. mexicanus*, its closely related North American representative, is not known from south of the southern boundary of Mexico. Another form closely related to these, *Myiarchus oberi*, has an extensive range in the Lesser

<sup>1</sup> In this connection I wish to acknowledge my indebtedness to Mr. Robert Ridgway, Curator of Birds in the U. S. National Museum, for the use of the large series of *Myiarchi* from southern Mexico, Central America and the West Indies contained in the National Museum, including the types of Mr. Ridgway's *M. nuttingi* and *M. brachyurus*, and of Mr. Lawrence's *M. oberi*. I am also indebted to Mr. George B. Sennett for his series of nearly 100 specimens from Texas and eastern Mexico, while our own Museum contains a large number of specimens from Arizona, Mexico and Central America, giving a total of over 300 specimens of the section of the genus *Myiarchus* with rufous-edged rectrices. Our Museum series contains the types of Mr. Lawrence's *M. yucatanensis* and *M. cinerascens*.

Antilles. These form what may be termed the *M. tyrannulus* group. *M. mexicanus* is represented by two forms, as follows: (1) *M. mexicanus*, of southern and eastern Mexico, ranging north to southern Texas; and (2) *M. mexicanus magister*, of western Mexico, ranging north into Arizona.

*Myiarchus oberi* Lawr. (Ann. New York Acad. Sci., I, 1877, p. 48), from the Lesser Antilles, is larger and darker than *M. tyrannulus*, with the bill longer, narrower, deeper and blacker. A series of 15 specimens (5 males, 7 females, and 3 not marked for sex, from Dominica, Granada, St. Vincent, etc.) measure as follows, the males as usual proving a little larger than the females: wing, 3.44-4.08, averaging 3.76; tail, 3.16-3.88, averaging 3.53; exposed culmen, .74-.90, averaging .83.

*Myiarchus mexicanus* (Kaup)<sup>1</sup> is larger than even *M. oberi*, and also differs from it in its paler colors and broader, flatter bill. It is consequently much larger than *M. tyrannulus*, and has a relatively larger bill. While there is but little difference in the general coloration, the rufous on the inner vanes of the rectrices is rather broader and much more uniform in development, especially on the outer rectrix.

*Myiarchus mexicanus magister* (Ridgw.) is scarcely distinguishable in coloration from *M. mexicanus*, when specimens strictly comparable as to season are compared. There is, however, considerable average difference in size, so that the two forms are very fairly entitled to recognition, as shown by the following measurements, where Arizona specimens (*M. m. magister*) are compared with specimens from the Lower Rio Grande (*M. mexicanus*).

Lower Rio Grande Valley (Hidalgo, and Lomita Ranch, Texas; Coll. George B. Sennett), 12 males and 12 females: *Males*: wing, 3.90-4.22, averaging 4.04; tail, 3.50-3.85, averag-

<sup>1</sup> I accept Dr. Sclater's conclusions (P. Z. S., 1871, p. 84) respecting Kaup's troublesome name *Tyrannula mexicana* as against Mr. Salvin's later opinion (Biol. Centr.-Am. Aves, II, 1889, p. 91), since Mr. Salvin admits that in the specimens "compared with Kaup's type," "the tip of the inner web of the outer tail-feather is rufous," and thus not like "typical *M. cinerascens*," to which, nevertheless, he refers Kaup's *Tyrannula mexicana*. If there be still any reason for doubt in the matter it seems better, in the interest of stability of nomenclature, to consider the case as settled by Dr. Sclater's comparisons, especially since the name *M. mexicanus* Sclater, if not the *Tyrannula mexicana* of Kaup, is the well-established cognomen of the bird so well characterized by Baird in 1850 as *Myiarchus cooperi*.

What the *Tyrannula cooperi* of Kaup was may never be determined, the type having been lost. Fortunately this is not important, since *Tyrannula cooperi* Kaup (1851) is forstalled by *Tyrannula cooperi* Bon. (1850) = *Muscicapa cooperi* Nutt. (1832) = *Tyrannus borealis* Swain (1831).

ing 3.64; exposed culmen, .77-.85, averaging .80. *Females*: wing, 3.67-3.92, averaging 3.79; tail, 3.30-3.58, averaging 3.46; exposed culmen, .74-.84, averaging .78. *General average*: wing, 3.91; tail, 3.55; culmen, .79.

Arizona (Pinal County), 6 males and 5 females: *Males*: wing, 4.24-4.46, averaging 4.33; tail, 3.91-4.22, averaging 4.04; exposed culmen, .84-1.00, averaging .94. *Females*: wing, 4.02-4.16, averaging 4.10; tail, 3.65-3.95, averaging 3.76; exposed culmen, .82-.98, averaging .88. *General average*: wing, 4.22; tail, 3.90; culmen, .92.

For fully twenty years these two forms have been practically recognized by American ornithologists.<sup>1</sup> It was not, however, till 1884 that they were clearly defined, when they were formally separated by Mr. Ridgway and their respective habitats defined.<sup>2</sup> Series from southern Mexico commonly include both forms, and also intermediate examples, the latter perhaps being resident birds and the former migrants from the north.

*Myiarchus yucatanensis* Lawr. (Proc. Acad. Nat. Sci. Phila., 1871, p. 235) was formerly referred by various writers to *M. mexicanus*. Of late, however, it has been currently accorded the rank of a species.<sup>3</sup> Mr. Ridgway (l. c.) and Dr. Sclater (l. c.) consider it as nearly related to *M. stolidus* of Jamaica, while Mr. Salvin (l. c.) compares it with *M. lawrencei*, to which it certainly bears a very close resemblance. The two original specimens (No. 42,841, Am. Mus. Nat. Hist., marked "type" by Mr. Lawrence himself, and No. 39,213, U. S. Nat. Mus.) are both in very worn plumage, and were these the only specimens known I should not hesitate to refer them to *M. lawrencei*. I am, therefore, quite willing to accept Mr. Salvin's view that there is "very little difference between these Yucatan birds (*M. yucatanensis*) and the form of *M. lawrencei* found in eastern Mexico from Vera Cruz northwards." While the types bear a strong resemblance

<sup>1</sup> Cf. Coues, Proc. Acad. Nat. Sci. Phila., 1872, pp. 65-79; Baird, Brewer and Ridgway, Land Birds N. Am., II, 1874, p. 331; Coues, Bull. U. S. Geol. Surv., IV, 1878, p. 32; Ridgway, Proc. U. S. Nat. Mus., I, 1878, p. 139.

<sup>2</sup> Proc. Biol. Soc. Washington, II, p. 90. See also further, Ridgway, Man. N. Am. Birds, 1887, p. 333.

<sup>3</sup> Cf. Ridgway, Proc. Biol. Soc. Washington, II, 1884, p. 92; Man. N. Am. Birds, 1887, p. 334; Sclater, Cat. Birds Brit. Mus., XIV, 1888, p. 260; Salvin & Godman, Biol. Centr.-Am., Aves, II, 1889, 93.

in coloration to worn specimens of *M. tyrannulus*, in which the amount of rufous in the tail is below the normal, this is evidently not the species to which they bear the closest affinity.

Mr. Ridgway's *Myiarchus nuttingi* (Proc. U. S. Nat. Mus., V, 1882, p. 394) barely needs mention in the present connection, its affinities being with *M. cinerascens* rather than with the *M. mexicanus* group. It is peculiar in having generally the whole inner vane of the outer retrix rufous; in some specimens there is, however, a narrow dusky line on the inner side of the shaft near the tip, which, in exceptional specimens, broadens considerably apically. Such examples are hard to distinguish from occasional specimens of *M. cinerascens* in which the dusky spot at the tip of the inner vane is narrow, or not abruptly widened near the tip of the feather, as sometimes happens even in Arizona specimens of *M. cinerascens*.<sup>1</sup> Such examples may also be compared with small specimens of *M. mexicanus* in which the rufous on the inner vane of the outer retrix closely approaches the shaft. *M. nuttingi* is doubtless well entitled to recognition as a subspecies of *cinerascens*, under the name *M. cinerascens nuttingi* (Ridgw.).

Mr. Ridgway's *M. brachyurus* (Man. N. Am. Birds, 1887, p. 334) appears to be not clearly separable from *M. nuttingi*. There is no appreciable difference in coloration, while the habitat of *M. nuttingi* (southern Mexico to western Costa Rica) includes that of *M. brachyurus* (Nicaragua). The supposed difference between the two birds is thus essentially one of proportions respecting the relative length of the wing and tail, and is probably based on individual variation.

**127. *Myiarchus ferox* (Gmel.)** (*Myiarchus tyrannulus* of many authors, not of Müll.).—The 25 specimens of this species represent every month in the year, except July, as follows: January, 2; February, 3; March, 2; April, May and June, 1 each; July, 0; August, 4; September, 4; October, 3; November, 3; December, 1.

<sup>1</sup> Since the above was written three specimens of alleged *M. nuttingi* have been recorded from Arizona (Fisher, Auk, IX, Oct., 1892, 394). Through the kindness of Dr. A. K. Fisher I have had opportunity to compare them with a large series of Arizona and Mexican specimens. The subject has also come before the A. O. U. Committee on 'Classification and Nomenclature of North American Birds,' which, after due consideration, reached the conclusion that *M. nuttingi* is merely a smaller southern form of *M. cinerascens* (see Auk, X, Jan., 1893, p. —).

The single December specimen is a bird of the year in first plumage. Below it scarcely differs from the adults; above the whole plumage is darker, the head decidedly rusty brown, the rump rufous, and the quills of the wings and tail broadly edged with bright rufous, and all the wing-coverts are edged broadly with grayish rufous. A January specimen in molt still retains part of the first plumage, the unmolted portions agreeing with the December specimen above described, part of the wing and tail feathers being rusty edged, etc.

The January and February specimens are all in molt. In freshly-molted birds (taken March to May) the color above is darker, and the gray of the throat and breast, and the yellow of the abdomen, are much deeper and stronger than in the specimens taken toward the close of the breeding season, which have become much lighter (especially more ashy above) through fading.

The measurements of 20 specimens, 12 males and 8 females, range as follows: *Males*: wing, 3.22-3.68, averaging 3.44; tail, 3.04-3.40, averaging 3.26; exposed culmen, .66-.72, averaging .69. *Females*: wing, 3.28-3.42, averaging 3.36; tail, 2.92-3.40, averaging 3.21; exposed culmen, .65-.72, averaging .69.

Mr. Lawrence's ***Myiarchus venezuelensis*** (Proc. Acad. Nat. Sci. Phila., 1865, p. 38) is a bird in fresh plumage (the type is before me) with the outer vanes of the tail-feathers conspicuously edged with bright rufous. It is probably not separable from *M. ferox*. The same author's ***Myiarchus panamensis*** (Ann. New York Lyc. Nat. Hist., VII, 1860, p. 284) seems entitled to rank as a larger northern form of *M. ferox*, and may be recognized as *M. ferox panamensis*. It is represented by the type and four other specimens from Panama, labeled as this species by Mr. Lawrence. In color these specimens present no very appreciable differences from the Chapada series. They measure as follows: wing, 3.40-3.78, averaging 3.59; tail, 3.34-3.54, averaging 3.44; exposed culmen, .72-.82, averaging .76.

**128. *Empidonax varius* (Vieill.).**—This species is apparently a summer resident only at Chapada. The series of 15 specimens was taken as follows: September, 3; October, 3; November, 1; January, 2; February, 6.

Two young birds, taken Feb. 21 and 24, are still partly in first plumage, entirely lacking the yellow at the base of the crest feathers, while the cap is brown, with the feathers edged broadly with rufous, as are also the wing-quills and the lesser and primary coverts, the others being broadly edged with white. The dorsal plumage generally is also more or less edged with rufous.

**129. *Tyrannus aurantio-atro-cristatus* d'Orb. & Lafr.**—The 7 specimens representing this species were taken one each in August, September and November, 2 in December, and 2 in February. It is to be inferred from this that it is only a summer visitor and not common.

One of the December specimens (taken Dec. 1) is a young bird in first plumage, with the quills not fully grown. Below it differs little in color from the adults, but above the upper tail-coverts, the quills, and the lesser and primary wing-coverts are broadly edged with dark rufous. The cap is dark brown externally, with the feathers basally rusty whitish, the central ones with a faint tinge of yellow.

**130. *Tyrannus albogularis* Burm.**—Evidently a summer visitor to Chapada. The series of 21 specimens covers the period from August 21 to February 24. The August and September specimens are in fresh plumage; in the January and February specimens the plumage is much worn and faded. The yellow of the lower parts varies from pale sulphur yellow to orange yellow, according to season.

The series shows a wide range of variation in the size and shape of the bill and in the depth of the forking of the tail, of which latter Dr. Sclater's figure (P. Z. S., 1880, p. 29) gives a rather exaggerated impression. The depth of the fork is generally under .75 in., varying in the present series from about .60 to .90. In other words it is only a little greater than in *T. melancholicus*, which, however, is a larger bird, thus increasing the relative difference.

Following are the measurements of 16 specimens, 8 males and 8 females: *Males*: wing, 4.13–4.37, averaging 4.27; tail, 3.60–4.02, averaging 3.82; exposed culmen, .70–.78, averaging .73. *Females*: wing, 3.96–4.22, averaging 4.08; tail, 3.46–3.82, aver-

aging 3.60; exposed culmen, .96-.74, averaging .72. General average, wing, 4.17; tail, 3.72; bill, .72.

**131. *Tyrannus melancholicus* (Vieill.).**—Of the 22 specimens representing this species 15 were taken in September, 1885, and three others during the last week in August of the same year; two others were taken in September, 1882; the remaining two, one Feb. 28, 1883, and the other March 20, 1885. The species would thus seem to be an irregular visitor to the vicinity of Chapada, 18 of the 22 specimens having been taken during the month of September and the last week of August in 1885.

The March specimen is a young bird, just completing the molt from the first plumage. The yellow of the lower parts is much paler than in adults; the tail feathers are narrowly edged externally, and the two middle pairs also internally, with rufous; a few only of the colored crest feathers have appeared, and the tips of the primaries are not incised. The remnants of the first clothing plumage above are brownish gray. The rest of the series is quite uniform in coloration, although the yellow below varies somewhat in intensity in different individuals, and the olive brown above is much more greenish in some than in others.

The following measurements indicate the range of variation in size: 10 *Males*: wing, 4.28-4.72, averaging 4.50; tail, 3.98-4.50, averaging 3.83; exposed culmen, .84-.92, averaging .87. 6 *Females*: wing, 3.98-4.50, averaging 4.25; tail, 3.33-3.70, averaging 3.47; exposed culmen, .81-.90, averaging .86. The 18 specimens average as follows: wing, 4.38; tail, 3.65; culmen, .86. The forking of the tail varies from .45-.75, averaging about .60.

Besides the Chapada series, I have before me about a dozen other specimens from Southern Brazil and Bolivia. They agree very closely in size and coloration with the Chapada birds, but differ quite appreciably from other specimens from northern South America, Central America, Mexico, and southern Texas. While the whole form a rather closely connected series, the two extremes are exceedingly unlike. The northern form—*T. couchi* Baird (*T. melancholicus couchi* of recent American writers)—is easily distinguished from the true *T. melancholicus* of southern South America by (1) its much larger size (wing and tail each

.40 of an inch longer), (2) shorter and stouter bill, (3) much less deeply forked tail, (4) very much paler coloration both above and below (tail above grayish brown instead of black; the back olive gray instead of olive brown; throat and upper breast white instead of deep gray; less olive across the breast and the yellow of abdomen many shades deeper). Series of *T. m. couchi* and *T. melancholicus* when compared appear widely different, and specimens of either can be recognized at sight without the slightest difficulty. In fact, so far as the coloration of the ventral surface is concerned, *T. m. couchi* presents a very close resemblance to *T. albogularis*. For comparison in respect to size I append measurements of 7 specimens from the Lower Rio Grande Valley in Texas (Lomita Ranch, near Brownsville, Coll. George B. Sennett), as follows: 4 *Males*: wing, 4.70-4.98, averaging 4.89; tail, 3.68-4.15, averaging 3.91; exposed culmen, .80-.85, averaging .82. 3 *Females*: wing, 4.50-4.92, averaging 4.72; tail, 3.74-3.84, averaging 3.78; exposed culmen, .80-.86, averaging .83. General average of the 7 specimens (Chapada averages of 18 specimens in parenthesis for comparison); wing, 4.81 (4.38); tail, 3.87 (3.65); bill, .82 (.86). Depth of forking of the tail, .25-.35, averaging about .25 (.60).

A series of 8 specimens from Yucatan, Guatemala, and Panama (mostly unmarked for sex) are considerably smaller than the Texas series, averaging as follows: wing, 4.48; tail, 3.70; bill, .77. They are thus intermediate in size, as they are also in other characters, between *T. melancholicus* and *T. m. couchi*. Specimens from Cayenne, Trinidad, Venezuela, Colombia, and Amazonia are still smaller, and in coloration (except perhaps the Venezuela and Colombia specimens) more nearly approach *T. melancholicus*. They form, with the Central American birds, a thoroughly connected series, but being on the whole quite unlike either of the extremes, may very well stand as *T. m. satrapa*, under which latter designation the form was at one time recognized by various authors.

**132. *Milvulus tyrannus* (Linn.).**—Represented by 13 specimens, taken as follows: August, 5; September, 5; October 2; December, 1. Probably only a summer visitor.

(To be continued.)