

(1) The difference between the refractive indices of the cell substance and air without involving the hypothesis that this difference is distinctly greater for blue than for red.

(2) The small size of the pores whose diameter is small in comparison with a wave-length of light." <sup>1</sup>

The findings in the present paper confirm Haecker's theory completely, and emphasize the untenable nature of Gadow's views.

#### CONCLUSIONS.

1. Non-metallic blues of feathers are due to the scattering of blue light by very fine pores in the walls of the outer layer of cells of the barbs of the feather. This is the blue described by Tyndall, which is commonly observed in turbid media.

2. No blue pigments, and no other structural causes of blue color have been observed in non-metallic blue feathers.

3. Green feathers are essentially the same as blue feathers, except that the blue cells are overlaid by a transparent yellow layer.

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## TWO NEW BIRDS FROM NICARAGUA.

BY WHARTON HUBER.

IN working over the ornithological material obtained by the 1922 Nicaraguan Expedition of the Academy of Natural Sciences of Philadelphia, I find two apparently undescribed forms which I have diagnosed and named as follows. My thanks are due now as always to Dr. Witmer Stone, Executive Curator of the Academy of Natural Sciences, for valuable help rendered and to Dr. Chas. W. Richmond of the U. S. National Museum for the loan of specimens for comparison. The color names used are from Ridgway's 'Color Standards' (1912).

### ***Lurocalis stonei* spec. nov.**

*Type*.—A. N. S. P. No. 75160 ♂, ten miles above mouth of Banbana River, Nicaragua, June 6, 1922. Collected by Wharton Huber.

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<sup>1</sup> Cf. Rayleigh: *Phil. Mag.*, (4) **41**, 274 (1871); (5) **47**, 375 (1899); Bock: *Wied. Ann.*, **68**, 674 (1899).

*Characters.*—Similar to *L. semitorquatus*, but smaller, spots on the upper surface brighter (cinnamon-rufous), spots on the breast smaller and of a darker brown ground (dark sepia brown). Black bars on abdomen more numerous and closer together on a sayal brown ground color.

*Description of type.*—Head and upper parts deep, brownish black, each feather with cinnamon rufous lateral spots. Feathers of hind neck grayish white mottled with black, tip of each feather with a black spot flanked by a small, triangular spot of cinnamon-rufous. Scapulars grayish white basally barred with black, ends of feathers brownish black with lateral spots of cinnamon-rufous. Some of these spots at least with black centers. Last secondaries grayish white barred and speckled with black, the larger central black spots cinnamon-rufous basally.

First primary uniform brownish black with a very narrow tip of buffy white. Second primary with three and third with four spots of cinnamon rufous on the outer web. Rest of primaries barred on both webs with cinnamon rufous. All of the primaries tipped with grayish white, edged basally with cinnamon-rufous. Rump brownish black, each feather with lateral spots of cinnamon-rufous, the spots lengthening into bars of grayish white as they near the base of the feather. Tail brownish black above, lighter below, crossed by interrupted bars of cinnamon-rufous, tip of tail becoming lighter. Chin, throat and upper breast deep sepia brown, each feather with lateral spots of cinnamon-rufous. A large white patch extending across the throat. Lower breast, abdomen and under tail-coverts have each feather with alternate bars of black and sayal brown. Axillaries sayal brown, each feather with central portion black. Length (skin) 192 mm. Wing 188. Tail 83. Culmen from nostril 7. Tarsus 11. Middle toe 15.

*Remarks.* This specimen was shot from a flock of 15 or 20 individuals that were flying back and forth over the Banbana River at dusk. The flight was much more falcon-like than that of a Nighthawk. They were very noisy in their flight, uttering a harsh call at more or less regular intervals. As the pitpan was travelling rather fast on the crest of a flood I did not have time to collect more specimens as we passed through the flock. This is so far as I can ascertain the first record of the genus *Lurocalis* north of South America. The species is named in honor of Dr. Witmer Stone.

The average measurements of three adult specimens of *Lurocalis semitorques* from South America are—

Length (skin) 216.3. Wing 218.6. Tail 87. Culmen from nostril 7. Tarsus 12.3. Middle toe 16.

***Streptoprocne zonaris bouchellii* subsp. nov.**

*Type*.—A. N. S. No. 75157 adult ♂, Eden (Lat. 14°-00' N, Long. 84°-26' W.) Nicaragua, March 25, 1922. Collected by Wharton Huber and J. Fletcher Street.

*Characters*.—Similar to *S. z. albicincta* but white collar in front decidedly narrower and much less white, only the tips of the lower throat feathers for about 3 millimetres being white, rest of the feathers sooty blackish presenting an indistinct and mottled collar, in some specimens the collar is barely traceable.

*Description of type*.—Forehead and pileum black, sides of the head, chin and throat sooty black; a white collar encircling the neck, clear white on the hind neck, white collar on lower throat and sides of neck presenting a mottled effect. White tips to feathers 3 millimetres or less in length; basally these feathers are sooty black; back, scapulars, rump and upper tail-coverts glossed with greenish. Length of (skin) 195 mm. Wing 197. Tail 72. Exposed culmen 9.5. Tarsus 20. Middle toe 14.

*Female*.—Slightly larger in size than the male. Similar in coloration but slightly darker.

*Remarks*: While the range of this subspecies is at present unknown, it will probably be found at the higher elevations of the interior mountain ranges of Nicaragua. It is named in honor of Dr. Theodore W. Bouchelle who rendered us invaluable assistance in our work in Nicaragua.

The measurements of eight specimens shot by the writer at Eden, Nicaragua are as follows:

MALES		Length (Skin)	Wing	Tail	Exposed Culmen	Tarsus	Middle Toe
A. N. S. No. 75157	Type March 25, 1922	195	197	72	9.5	20	14
A. N. S. No. 75160	April 1, 1922	178	194	70	8.	20	14
A. N. S. No. 75156	March 25, 1922	194	194	79	8.5	21	14
A. N. S. No. 75159	April 1, 1922	185	196	79	9.	21	14
Average		188	195.2	75	8.7	20.5	14

  

FEMALES		Length (Skin)	Wing	Tail	Exposed Culmen	Tarsus	Middle Toe
A. N. S. No. 75154	March 25, 1922	201	201	83	9	21	14
A. N. S. No. 75155	March 25, 1922	211	205	84.5	9	21.5	14.5
A. N. S. No. 75158	March 29, 1922	175.5	191	78	9.5	21	135
A. N. S. No. 75161	April 1, 1922	185	195	75	9.5	20	14
Average		193.1	198	80.1	9.2	20.8	14

*Academy of Natural Sciences of Philadelphia.*