PROCEEDINGS

OF THE

15

Biological Society of Washington

VOLUME 45
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PUBLICATION NOTE

By a change in the By-Laws of the Biological Society of Washington, effective March 27, 1926, the fiscal year now begins in May, and the officers will henceforth hold office from May to May. This, however, will make no change in the volumes of the Proceedings, which will continue to coincide with the calendar year. In order to furnish desired information, the title page of the current volume and the list of newly elected officers and committees will hereafter be published soon after the annual election in May.

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(FOR 1932–1933)

(ELECTED APRIL 30, 1932.)

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The Committee on Publications declares that each paper of this volume was distributed on the date indicated on its initial page. The contents, minutes of meetings, and index for 1932 (pp. v–xii; 239–244) were issued on February 20, 1932. The title page and list of officers and committees for 1932–1933 were issued on June 21, 1932.

PLATES.

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PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

PROCEEDINGS.

The Society meets from October to May, on alternate Saturdays, at 8 P. M. All meetings during 1932 were held in the new lecture hall of the Cosmos Club.

January 9, 1932—770th Meeting.

President Jackson in the chair; 40 persons present.

Formal communications: E. W. Surber, Control of vegetation in ponds; Frank Been, The Sequoias of Sequoia National Park.

January 23, 1932—771st Meeting.

President Jackson in the chair; 160 persons present.

New member elected: L. H. Kelso.

Informal communication: A. Wetmore, Note on bird bones from caves in New Mexico.

Formal communications: W. L. Schmitt, Underwater motion pictures of fish; W. E. Hastings and E. W. Nelson, Motion pictures of Michigan wild life from the Michigan Conservation Commission.

February 6, 1932—772d Meeting.

President Jackson in the chair; 75 persons present.

Informal communication: F. Thone, Exhibition of recent biological publications.

Formal communication: H. C. Kellers, The U. S. Naval Observatory Eclipse Expedition to Niuafoou Island and biological finds.

February 20, 1932—773d Meeting.

President Jackson in the chair; 75 persons present.

New members elected: W. E. Crouch, A. M. Day, E. R. Hall, S. P. Young.

Formal communications: A. Wetmore, Further explorations in Hispaniola; R. E. Stadelman, Snakes of Honduras and preparation of antivenim serum.

March 5, 1932—774th Meeting.

Vice-President Chambliss in the chair; 60 persons present.

New member elected: O. L. Austin, Jr.

Formal communications: William Robinson, The use of maggots in surgery; Louis Radcliffe, Black bass conservation.

March 19, 1932—775th Meeting.

President Jackson in the chair; 175 persons present.

Informal communications: T. S. Palmer, Note on gorillas in captivity; P. Bartsch, Note on a shipment of tree snails from the Philippines; H. D. Humphrey, Note on recent articles in the National Geographic Magazine.

Formal communications: F. G. Orsinger, Aquaria in the home; Arthur Pack, Motion pictures of Alaska wild life with explanations.

April 2, 1932—776th Meeting.

President Jackson in the chair; 70 persons present.

New members elected: E. A. Back, H. G. Frampton, A. J. Soumela, S. H. Thompson.

Informal communication: F. Thone, Exhibition of recent biological publications.

Formal communications: C. P. Clausen, Insect enemies of insects and their use in agriculture; B. M. Patten, Micro-moving pictures of living embryos.

April 16, 1932—777th Meeting.

President Jackson in the chair; 110 persons present.

Formal communications: N. A. Cobb, Inexpensive bird boxes suitable for observation of the occupants; Joseph Dixon, Moving pictures of the trumpeter swan; P. S. Galtsoff, The life of the coral reefs of the Hawaiian Islands.

April 30, 1932—778th Meeting.

53d Annual Meeting.

President Jackson in the chair; 16 persons present.

The annual reports of the Recording Secretary, Corresponding Secretary, and Treasurer were presented. Reports were presented by the Board of Trustees of the Permanent Fund, the Committee on Communications, and the Committee on Zoological Nomenclature. The report of the Committee on Zoological Nomenclature was adopted by the Society.

The following officers and members of council were elected: *President*, H. H. T. Jackson; *Vice-Presidents*, C. E. Chambliss, C. W. Stiles, T. E. Snyder, H. C. Fuller; *Recording Secretary*, S. F. Blake; *Corresponding Secretary*, Joe S. Wade; *Treasurer*, F. C. Lincoln; *Members of Council*, W. R. Maxon, A. A. Doolittle, I. N. Hoffman, E. P. Walker, T. H. Kearney.

October 29, 1932—779th Meeting.

President Jackson in the chair; 50 persons present.

Informal communications: A. S. Hitchcock, Exhibition of tubers of Glycine apios; T. S. Palmer, Note on the hatching period of eggs of box turtle, and Note on the recent A. O. U. meeting at Quebec; Malcolm Davis, Note on the observation of the bald eagle and black vulture in District of Columbia; F. C. Lincoln, Note on the recent destruction of birds at Washington Monument.

Formal communications: H. F. Prytherch, Recent studies in the development, distribution, and cultivation of oysters; F. Thone, Some recent biological explorations.

November 12, 1932—780th Meeting.

President Jackson in the chair; 75 persons present.

New member elected: L. B. Benson.

Informal communication: T. S. Palmer, Note on the results of the recent national election in their bearing on members of Congress interested in conservation of wild life.

Formal communications: C. W. Stiles, Is it fair to say "Hookworm disease has almost disappeared from the United States"? F. Thone, Recent Biological literature.

November 26, 1932—781st Meeting.

President Jackson in the chair; 55 persons present.

New members elected: W. H. Burt, H. S. Fuller, L. W. Hutchins, F. G. Orsinger.

President Jackson was nominated as resident Vice-President of the Washington Academy of Sciences.

Informal communications: F. C. Lincoln, Exhibition of Austin's Birds of Labrador and of the colored plates from Forbush's Birds of New England; P. B. Johnson, Note on glow worms in New Zealand.

Formal communication: M. W. Stirling, Jivaro Indians of eastern Ecuador.

December 10, 1932—782d Meeting.

President Jackson in the chair; 23 persons present.

New members elected: W. R. Boulton, S. F. Hildebrand.

Formal communications: Herbert Friedmann, The supposed visual function of the nictitating membrane in the domestic pigeon; Fernandus Payne, Some problems of protoplasm.

Vol. 45, pp. 1–2 February 29, 1932

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A NEW BLETIA FROM HONDURAS.

BY OAKES AMES.

Among orchids collected by J. B. Edwards in the Republic of Honduras, near Tegucigalpa, a new species of Bletia is represented. It is comparable with *B. tuberosa* comb nov. (*Limodorum tuberosum* L. Sp. Pl. ed. 1, 2 (1753) 950), in having seven distinct keels that pass through the disc longitudinally, but it is quite different in having larger flowers and a strikingly dissimilar habit. It is also closely allied to *Bletia fulgens* Reichb. f., from which it differs in the keels of the labellum and in the smaller flowers which are of a rich rose-purple color, rather than orange.

Bletia Edwardsi Ames, sp. nov.

Radices fibratae, breviter pubescentes. Folia elliptico-lanceolata, acuminata, acuta. Scapus validus. Racemus plus minusve decemflorus. Flores pro genere magni, purpurei. Sepala lateralia elliptico-lanceolata, acuta, glabra. Sepalum dorsale simile. Petala elliptico-oblonga, acuta, glabra. Labellum ultra medium conspicue trilobatum. Discus carinis septem ornatus. Columna prope basim bialata.

Roots coarsely fibrous, whitish, finely and shortly pubescent. Corm more or less ovoid or globose, 2.5 cm. long, pale green, somewhat wrinkled, glossy, concealed by closely appressed nervose scarious sheaths. Leaves arising from near the summit of the corm, two, 22–32 cm. long, 4–4.5 cm. wide, elliptic-lanceolate, acuminate, acute, chartaceous, the lowermost one contracted into a cylindrical stem-like petiole 10.5 cm. long, sheathing the petiole of the uppermost leaf; visible part of the petiole of the upper leaf slender, 5.5 cm. long. Scape rather stout, exceeding the leaves, rising laterally from the corm. Raceme 20.5 cm. long, bearing about 10 rose-purple flowers. Bracts of the raceme 4–8 mm. long, broadly triangular, acute. Pedicels with the ovary 2.5–3.5 cm. long when the flowers are expanding, smooth, obliquely ascending or almost erect. Flowers distant, about 3 cm. long. Lateral sepals 2.8 cm. long, 8 mm. wide, elliptic-lanceolate, acute, fleshy or thickened at the tip, smooth. Dorsal sepal similar.

Petals about 2.5 cm. long, 8 mm. wide, elliptic-oblong, acute, membranaceous, smooth. Labellum dilated upward from a cuneiform base, 2.6 cm. long, 3-lobed; lateral lobes more or less converging over the column, porrect, rounded, 6 mm. wide; apical lobe broadly reniform or orbicular, 11 mm. wide, retuse, apiculate; disc 7-carinate, the two outermost keels much abbreviated, much exceeded by the lateral lobes, the three central keels much longer, extending to the middle of the middle lobe where they become expanded, erect, rounded and complanate, the remaining keels hardly extend to the base of the middle lobe. Column about 2 cm. long, dilated upwards, with a conspicuous membranaceous wing on each side near the base.

REPUBLIC OF HONDURAS, Department of Tegucigalpa, Vicinity of San Juancito. "Peña Blanca." *J. B. Edwards 24,* August 9, 1931. Altitude 5000–6000 feet. Terrestrial in cloud-forest. (Type in Herb. Ames 37,774.)

Vol. 45, pp. 3–4 February 29, 1932

PROCEEDINGS
OF THE
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ADDITIONS TO THE ORCHID FLORA OF THE UNITED STATES.

BY OAKES AMES.

In a recent expedition to the Davis Mountains of Texas, E. J. Palmer, collecting for the Arnold Arboretum of Harvard University, discovered a species of Spiranthes which previously had been known only as a native of Mexico. It was originally collected in Chiapas by Galeotti, and inadequately characterized by A. Richard and Galeotti in Annales des Sciences Naturelles, ser. 3, 3 (1845) 32, under the name *Spiranthes parasitica*. Ever since it was discovered, this has been a rare species. That it should occur in Texas makes reasonable the assumption that intensive exploration there will not only extend the range of a number of Mexican plants, but will perhaps reveal the presence there of several of the extraordinarily rare orchids of Mexico that have been inadequately understood since they were first described.

Spiranthes parasitica A. Rich. & Gal. in Ann. Sci. Nat. ser. 3, 3 (1845) 32; in Comptes Rend. Acad. Sci. Par. 18 (1844) 513 nomen; Schlechter, in Beihefte, Bot. Centralbl. 36, Abt. 2 (1918) 434.

TEXAS, Jeff Davis County, Davis Mountains, Upper Limpia Canyon. *E. J. Palmer 30786*, June 11, 1926. Moist ground in shade, near a creek. 2200 meters altitude.

In June, 1931, J. A. Moore and J. A. Steyermark, while collecting in the Chisos Mountains of Texas, discovered two plants of a species of Spiranthes that was originally described from specimens found in Mexico by E. W. Nelson. This species, *Spiranthes saltensis*, has heretofore been known only from the Mexican states of Durango and Hidalgo.

In a monographic treatment of the Spiranthinae published in 1920, Rudolph Schlechter proposed a new genus for the reception of a number of species with which *Spiranthes saltensis* is closely allied. In my opinion, Schlechter's proposals are inexpedient because many of his new genera

depend on a single differentiating character, and are hardly helpful in bringing about a clearer understanding of the species which have been referred to Spiranthes in its traditional sense.

Spiranthes saltensis Ames Orch. 2 (1908) 258; 3 (1908) 72, t. 51. Schlechter in Beihefte, Bot. Centralbl. 36, Abt. 2 (1918) 435.

Schiedeella saltensis Schltr. in Beihefte, Bot. Centralbl. 37, Abt. 2 (1920) 381.

MEXICO, State of Durango, near El Salto. *E. W. Nelson, 4545*, July 12, 1898: State of Hidalgo. *C. G. Pringle* 11918, June 27, 1904.

TEXAS, Brewster County, Chisos Mountains, North slope of Emory Peak. *J. A. Moore & J. A. Steyermark 3214*, June 22, 1931. Grassy soil; soil pockets in rim rock. 2250 meters altitude.

Vol. 45, pp. 5–8 April 2, 1932

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A NEW SNAKE FROM FLORIDA.

BY M. K. BRADY.

During June, 1931, the National Zoological Park received from Mr. R. F. Deckert a living snake taken from Lower Matecumbe Key, Monroe Co., Fla. The specimen represented an apparently distinct race of *Elaphe quadrivittata* and, especially since it seems to have been confused heretofore with Cope's *Elaphe rosacea*, I feel warranted in describing it as new. I name it in honor of Mr. Deckert who has contributed so much to our knowledge of Florida herpetology.

Elaphe quadrivittata deckerti, new subspecies.

Diagnosis.—A slender, orange-red Elaphe, having four brownish longitudinal stripes on the body, about 40 plumbeous saddles on the dorsum between the median stripes, a bright orange, distinctly spotted venter, chin and throat bright yellow, ventral scales usually more than 240, caudals normally 90 or more.

Range.—Lower Matecumbe Key, Monroe Co., Florida.

Type.—U. S. N. M. No. 84295, a young male collected on Lower Matecumbe Key, June, 1931, by R. F. Deckert. Paratypes M. C. Z. Nos. 29134 and 29322, taken on Lower Matecumbe Key during 1928, by J. N. Farnum.

Description of type.—Rostral twice as broad as deep, barely visible from above; length of internasal suture one-half length of prefrontal; frontal narrowing posteriorly, slightly longer than its distance from rostral and well separated from preoculars; supraoculars narrower than frontal; nasal divided; loreal small; one preocular; two postoculars, the lower one very small; temporals 1+3; supralabials 8 on right side, 9 on left, the second in contact with the nasal and loreal, third in contact with loreal and preocular, the fourth on the left side barely touches the preocular, the right fourth and left fifth touch the preocular and eye, the right fifth and left sixth touch the eye, the postocular and the first temporal; 12 infralabials, the first coming together behind the symphysial; the chin shields are of

equal length, the first contacting five, the second two, lower labials. Eleven dorsal rows of scales on the anterior part of the body are slightly keeled, the number of rows increasing to twelve posteriorly. There are two pores at the apex of each scale. Scales in 25 rows anteriorly, increasing to 27 and decreasing to 17 at beginning of tail; ventrals 243; anal divided; caudals 80, the tail being slightly mutilated.

Dimensions.—Head and body 797 mm.; tail 171 mm.; diameter of eye 4.5 mm.; eye to tip of snout 8 mm.; total length 968 mm.

Coloration (in life).—Above four hair brown longitudinal stripes, extending from neck along body, dorsal stripes extending to tip of tail, lateral stripes ending at vent. The stripes cover two scale rows anteriorly and posteriorly, widening to cover three rows mediad. Forty dark grey to plumbeous, somewhat concave saddles between dorsal stripes on body. Saddles on tail represented by an indistinct plumbeous clouding. Dorsal ground-color a rich orange-ochraceous, slightly clouded with grey. Scales in longitudinal stripes frequently tipped with white. Ventral color a bright wax yellow mottled with white on the chin and throat changing to orange, spotted with grey, posteriorly. The ventrals are upturned at their ends and are a rosy grey over the posterior two-thirds of the animal, forming a less distinct third pair of longitudinal stripes. The iris is strongly suffused with red, the pupil is black. The more anterior dorsal saddles have faint suggestions of black borders. The top of the head is more of a buff than the dorsal ground color of the body and has no pattern.

M. C. Z. Nos. 29134 and 29322, respectively a male, 813 mm., and female, 912 mm., which I have designated as paratypes, agree precisely with the type but show a partial loss of the longitudinal stripes due to sloughing of the scales incidental to preservation. In addition to the type and paratypes, I have seen four other specimens, all typical. The form is at present readily distinguishable from the typical *E. q. quadrivittata* from northern and central Florida and from the confusing forms of the species found in tropical Florida, on the Eastern Rock-Rim and on the semi-insular Keys of the Everglades. It is conceivable that the connection between Lower Matecumbe and the northern Keys and mainland through the causeways of the Overseas Highway eventually may bring about a change in this situation. Snakes of this species seem to have less of a disposition to wander than do some other related serpents and this may be instrumental in delaying changes due to crossing with other stocks, in the case of the present form. This tendency to remain in one locality, apparently due to the semi-insularity of the hammocks in which the species lives, may have combined with another possible factor, the ecological changes experienced by a Sabalian forest animal living under true tropical conditions, to produce the complexity of forms found on what may be called the mainland of tropical Florida. Several of these types stand out and, with a study of sufficient material, eventually may be found to warrant consideration as distinct races. One of the most distinct of these forms, which I mention because it has puzzled students of reptiles in this singular area, is apparently restricted to the southeastern hammocks or Keys of the Eastern Rock-Rim, in the Black Point Creek area. This is a

brilliant orange form with a most marked tendency towards loss of all markings in the adult.

Concerning *Elaphe rosacea* (Cope), which has been confused with the present form, *E. q. deckerti*, I have seen but two specimens; the type, U. S. N. M. No. 14418, from Key West, and M. C. Z. No. 14456, from Big Pine Key. The species resembles *E. quadrivittata* in possessing a ventral scute count of 240; it resembles *E. guttata* in the short tail, 74 caudals in the perfect specimen, and apparently does not have, as Cope suggested it did, the longer tail of the former species. It further resembles *guttata* in the square shape of the rostral, in the spotting of the venter, color pattern of the head and, from the accounts of the fresh specimens, coloration of the saddles. The possession of the four longitudinal stripes may not be an entirely reliable character, for two reasons: First, many of these southern Elaphes tend to lose the stripes upon preservation, in spirits at least, the stripes sloughing off with the softened outer epidermis. Secondly, some *guttata* are marked by four well developed longitudinal stripes, at least in some parts of Florida. I have seen an otherwise perfectly typical *guttata* from Gainesville, Fla., having the perfectly distinct stripes of *quadrivittata*. Mr. O. C. Van Hyning, of the Florida State Museum, through whose courtesy this specimen was made available, informs me that he has seen similar examples from various parts of Florida. The most distinguishing character of *rosacea* is the lateral pattern, a series of *w* shaped markings below and between the dorsal saddles and formed by the extensions of the corners of the saddles.

E. guttata occurs, apparently, throughout the southern Florida area. I have seen typical examples from the Lower (Key West) and Upper (Lower Matecumbe) Keys, from Paradise Key and other points on the Eastern Rock-Rim and from Cape Sable.

I am indebted to Dr. Leonhard Stejneger and Miss Doris Cochran of the National Museum, Dr. Thomas Barbour and Mr. Arthur Loveridge of the Museum of Comparative Zoology, for their kindness in allowing me to examine the specimens in their collections.

Vol. 45, pp. 9–14 April 2, 1932

PROCEEDINGS
OF THE
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NEW SOUTH AMERICAN WRENS.

BY W. E. CLYDE TODD.

The Troglodytidæ, or Wrens, are represented in the collection of the Carnegie Museum by 2896 specimens, comprised in 21 genera, 79 species, and 78 additional subspecies. Some of the new forms have already been characterized, and to these must now be added seven more, discovered in a more thorough study of the group. All seven are geographical races of species otherwise well known, and which appear to have a certain plasticity, responding readily to differing environment and to actual isolation of range. The present paper is the seventeenth of the series to appear in these Proceedings, and is governed by the same rules as to measurements, names of colors, etc., as its predecessors. Acknowledgments are due to the authorities of the U. S. National Museum and the American Museum of Natural History for the loan of material needed in this connection, and to Dr. C. E. Hellmayr for his notes on certain forms, kindly placed at my disposal.

Pheugopedius rutilus interior, subsp. nov.

Type.—No. 54,834, Collection Carnegie Museum, adult male; El Cauca, Santander, Colombia, August 7, 1916; M. A. Carriker, Jr.

Subspecific characters.—Similar to *Pheugopedius rutilus rutilus* (Vieillot) of Trinidad and the coast region of Venezuela, but with the general coloration of the under parts paler, the breast being yellow ocher, and the sides and flanks dull buffy citrine or very pale brownish olive.

Range.—Known only from the valley of the Rio Lebrija, Middle Magdalena Valley.

Remarks.—No form of *Pheugopedius rutilus* has heretofore been known from the Magdalena Valley, and it is therefore not surprising that the present series of eleven specimens, all from a comparatively restricted region in the State of Santander (El Cauca and La Palmita, west of Ocaña), should turn out to be new. They are uniformly paler below, sex for sex,

than skins of true *rutilus* from Venezuela taken at the same season (July 31–August 15). The buffy rufous area of the breast is not only paler, but is also more restricted, resembling thus *P. hypospodius*, from which, however, the new form differs in its more buffy, less grayish sides and flanks, and in its whiter, less grayish-tinged abdomen medially. From the Santa Marta race, *P. rutilus lætus*, which is equally pale, the new form differs in having the breast unspotted, except for one specimen, No. 54,848, which shows so much spotting that it could readily be referred to *lætus*. In view of these developments, *lætus* should almost certainly be ranked as a subspecies of *rutilus*, as just indicated.

Although I am fully aware that a literal interpretation of our present rules (*cf.* Zimmer, Field Museum Zoological Series, XVII, 1930, 405) would compel the abandonment of the generic term *Pheugopedius*, I prefer in this case to use a name whose significance is well known.

Pheugopedius rutilus intensus, subsp. nov.

Type.—No. 90,403, Collection Carnegie Museum, adult male; Azulita, Venezuela, August 7, 1922; M. A. Carriker, Jr.

Subspecific characters.—Similar to *Pheugopedius rutilus rutilus* (Vieillot), but with the under parts in general more richly colored, and with a strong tendency to spotting.

Range.—Maracaibo region of Venezuela.

Remarks.—Our series of twelve specimens come from Motatan and Azulita, in the Maracaibo basin of Venezuela. Although varying among themselves, they agree in the above respects, and are so obviously different from a series of true *rutilus* as to deserve formal separation. The breast is decidedly brighter, being raw sienna instead of antique brown, and in a majority of the adult individuals shows more or less dusky spotting, while the sides and flanks are correspondingly richer brown. These differences are hard to describe in precise terms, but they are sufficiently in evidence as the two series lie side by side. This richness of coloration, which is the best character of the new race, also serves to distinguish it as well from *lætus*, which is a pale form (paler even than true *rutilus*), although in their spotted under parts the two forms resemble each other. The new subspecies is evidently confined to the Maracaibo basin, and its characters are those we would expect to find (judging by analogy) in this humid area of the Tropical Zone.

Henicorhina leucophrys boliviana, subsp. nov.

Type.—No. 85,660, Collection Carnegie Museum, adult male; Incachaca, Department Cochabamba, Bolivia, September 11, 1921; José Steinbach.

Subspecific characters.—Similar to *Henicorhina leucophrys leucophrys* (von Tschudi) of the Andes of Peru, etc., but with the throat more decidedly streaked, and the abdomen with more or less indications of cross-bars or spots; the brown wash on the flanks is more restricted, and the color itself is darker and duller.

Range.—Subtropical Zone, Andes of Bolivia.

Remarks.—Both Sharpe (Catalogue Birds British Museum, VI, 1883, 288) and Hellmayr (Journal für Ornithologie, LI, 1903, 531) attribute *Henicorhina leucophrys* to Bolivia, but I have not yet been able to discover upon whose authority. The name is based upon a specimen from Peru, but just where it was collected we do not know (*cf.* Zimmer, Field Museum Zoological Series, XVII, 1930, 408). We have eleven skins from the highlands of Bolivia (Incachaca and Yungas de Cochabamba), which have been compared with four specimens from the Urubamba Cañon, Peru. They exhibit the usual amount of variation for this genus, affecting the shade of color on the flanks and its extent, the depth of color on the breast, and the indications of barring on the abdomen medially. Taking all this into account, however, they still seem to be as well entitled to a distinctive name as the other forms which have been separated of late years.

In a recent letter to the writer Dr. Hellmayr refers incidentally to specimens of this species from Bolivia as being exactly like others from Peru and eastern Ecuador. This may be true of those he has handled, but certainly our series from the Cochabamba region are racially distinct.

Henicorhina leucophrys meridana, subsp. nov.

Type.—No. 89,889, Collection Carnegie Museum, adult male; Heights of Tabay, Merida, Venezuela, July 6, 1922; M. A. Carriker, Jr.

Subspecific characters.—Similar to *Henicorhina leucophrys leucophrys* (von Tschudi) of the Andes of Peru, etc., but with the flanks richer, more rufescent brown; and the dark striping on the throat more prominent.

Range.—Andes of Venezuela (Merida) to the eastern slope of the Eastern Andes of Colombia (Subtropical Zone).

Remarks.—This new form is based on a series of twenty-seven specimens (adults and young), six from Rio Negro, a locality on the eastern slope of the Eastern Andes in the State of Boyaca, Colombia, and the others from La Cuchilla and the Heights of Tabay in the Merida region of Venezuela. A single specimen from Buena Vista (above Villavicencio), Eastern Andes of Colombia (American Museum No. 122,508), also belongs here. Variation in general color in this series is as well marked, and follows the same lines, as in the birds of the western slope of the Eastern Andes of Colombia, of which no less than thirty-four specimens have been available for comparison. After due allowance for this variation has been made, I find that the two respective series are easily separable by the characters above specified. The discovery that the birds of this species from opposite slopes of the Eastern Andes are respectively different raises the question as to the identity of *Troglodytes guttatus* Hartlaub (Systematisches Verzeichniss der naturhistorischen Sammlung der Gesellschaft Museum [Bremen], 1844, 28), which was described from "Neugranada." This name has been used by both Dr. Hellmayr (Journal für Ornithologie, LI, 1903, 530–1) and Dr. Chapman (Bulletin American Museum of Natural History, XXXVI, 1917, 525) for Colombian examples of *H. leucophrys*, and the latter author showed that in describing the supposed race *berlepschi* Ridgway (Proceedings Biological Society of Washington, XVI, 1903, 168) had merely renamed *guttata*. But more recently Dr. Chapman (Bulletin American Museum of

Natural History, LV, 1926, 572) has presented an arrangement relegating *guttata* to the synonymy of *leucophrys*, for which he claims a range from Peru to Panama. A small series from the Urubamba Cañon, Peru, which I have examined in this connection, agree best with our birds from the Magdalena slope of the Eastern Andes, which I would therefore now refer to *leucophrys* proper, thus agreeing with Dr. Chapman's conclusion. Although we do not know the exact locality whence came von Tschudi's type-specimen of *leucophrys*, it is unlikely that it came from a point south of the Urubamba region.

Specimens of *H. leucophrys* from Colombia and Venezuela were accordingly sent to Dr. C. E. Hellmayr for comparison with Hartlaub's type. He writes as follows: "I have compared the type of *Troglodytes guttatus* Hartlaub from the Bremen Museum with your series from the western and eastern slopes of the East Colombian Andes. The type, which is an adult bird in excellent condition, not faded at all in spite of its age, leaves no doubt as to exact identification. It happens to be an exceedingly typical example of the Magdalena slope race. Underneath it is an exact duplicate of Carnegie Museum No. 55,256, Pueblo Nuevo, Santander: throat just as white, unstreaked save for a few tiny dusky streaks in the malar region; foreneck and breast of the same pale gray shade; flanks and under tail-coverts as pale (buckthorn brown). Above it resembles in tone of back your No. 57,835, Las Ventanas; the pileum is as dull brownish as in No. 54,953, La Palmita. The dimensions (wing, 57, tail, 32) correspond to the measurements of males from the Magdalena slope."

The identity of *guttata* and *leucophrys* may now be considered as definitely established, leaving the bird of the Venezuelan Andes and the eastern slope of the Eastern Andes to be described as new.

In adult birds of true *leucophrys* the striping on the throat is scarcely or not at all evident, in which respect it differs from both *brunneiceps* and the new form here described. The upper parts vary all the way from a pale Brussels brown to a deep argus brown. The size averages a little greater than in the new form.

Leucolepis modulator rutilans, subsp. nov.

Type.—No. 95,398, Collection Carnegie Museum, adult female; São Paulo de Olivença, Rio Solimoës, Brazil, February 15, 1923; Samuel M. Klages.

Subspecific characters.—Similar to *Leucolepis modulator rufogularis* (Des Murs), but averaging slightly smaller, and having the general coloration darker and more rufescent.

Range.—Known at present only from the type-locality.

Remarks.—Four specimens of a *Leucolepis* from São Paulo de Olivença, on the south bank of the upper Amazon, are obviously different from the Rio Purús series, which I have identified as *rufogularis*. In the new race the characters of *rufogularis* (as compared with true *modulator*) are carried a step further, while the size is rather smaller. One adult male measures: wing, 67; tail, 37; bill, 18; tarsus, 22.5. Two adult females: wing, 61, 64; tail, 31; bill, 17.5, 18.5; tarsus, 21.5, 22. Five adult males of *rufogularis*,

on the other hand, average: wing, 70; tail, 38; bill, 18.6; tarsus, 23.5. Five adult females: wing, 68; tail, 37; bill, 17.6; tarsus, 23. In the new race the throat and breast are deep amber brown, and the rest of the under parts are washed with argus brown; the forehead is (near) auburn; and the upper parts are deep brown (between Brussels brown and raw umber) with a strong rufescent shade, the wings externally argus brown. It is by far the most deeply rufescent race of the species. In view of the fact that *rufogularis* occurs to the eastward, at Teffé, and to the westward, on the Peruvian Amazons, its range must be a restricted one.

Leucolepis modulator transfluvialis, subsp. nov.

Type.—No. 98,216, Collection Carnegie Museum, adult female; Manacapurú, Rio Solimoës, Brazil, October 22, 1923; Samuel M. Klages.

Subspecific characters.—Similar to *Leucolepis modulator rufogularis* (Des Murs), but rather smaller, and with general coloration lighter and less rufescent. Similar to *L. m. rutilans* of the upper Amazon (south bank) in size, but decidedly paler in general coloration.

Range.—North bank of the Amazon, west of the Rio Negro, to the base of the Andes in Colombia.

Remarks.—This race varies away from *rufogularis* in a direction opposite to that of *rutilans*, from which it is quite different in color characters, although the size is about the same. The rufous of the throat and breast averages paler than in *rufogularis*, being bright ochraceous tawny; the posterior under parts are also lighter (near Dresden brown); and the upper parts in general are less rufescent, or (near) sepia. Most of the series show a more or less decided rufous buffy wash on the abdomen.

The range of this race lies to the northward of the Amazon, and probably extends to the Rio Negro as a limit, although data on this point are still wanting. Its characters are supported by a series of twenty-six specimens in the Carnegie Museum collection, from Manacapurú and Tonantins. There are even indications that the birds from these two localities respectively may not be exactly the same, but I lay the slight differences between them to season. Two specimens from Florencia, Caqueta, Colombia, which I have examined in this connection through the courtesy of the authorities of the American Museum of Natural History, and upon whose peculiarities Dr. Chapman has already remarked (Bulletin American Museum of Natural History, LV, 1926, 573), agree absolutely with our series from the north bank of the Amazon, and show that the form ranges westward to the base of the Andes in Colombia. To the southward it is of course completely cut off by the Amazon from any of the southern forms. As seen in series it appears to be as well differentiated as any of the others here recognized. It differs from *L. modulator salvini* (Sharpe) in its much lighter general coloration, with the ear-coverts mostly rufous, instead of wholly olivaceous like the back.

Leucolepis modulator interpositus, subsp. nov.

Type.—No. 76,456, Collection Carnegie Museum, adult female; Villa Braga, Brazil, January 23, 1920; Samuel M. Klages.

Subspecific characters.—Similar in size and general coloration to *L. modulator transfluvialis*, but with the abdomen extensively grayish (smoke gray), the crissum rufescent (antique brown) and the flanks brownish (Dresden brown) in decided contrast; lower mandible pale.

Range.—Brazil, south of the Amazon, east to the Rio Tapajóz and west to the Rio Madeira.

Remarks.—This very distinct race is the *L. modulator griseilateralis* of Hellmayr, Novitates Zoologicæ, XVII, 1910, 262, but not the *Cyphorhinus griseilateralis* of Ridgway, Proceedings United States National Museum, X, "1887," 1888, 518. The latter, as shown by our series of sixty-four skins, is sharply limited in its westward range by the Rio Tapajóz, being found only on the east bank of that stream, whereas the present form inhabits the west bank, ranging thence to, but not beyond, the Rio Madeira, as shown by Dr. Hellmayr's record above quoted. He called attention to the discrepancies between the characters shown by his specimens and Ridgway's description, but believed they would disappear upon actual comparison. Instead of disappearing, however, these differences are emphasized. I regard *griseilateralis* as a distinct species, whose characters are intermediate to a degree between *L. modulator* and *L. arada* ("*musicus*"), but the present bird is clearly only a subspecies of *modulator*, as shown by its almost wholly rufescent-olivascent ear-coverts, with no trace of streaking below, and by its rufous superciliaries. Only in its pale under mandible and in the grayish color of the abdomen does it suggest *griseilateralis*, and the color in question is duller and less extensive. The throat and breast are obviously darker rufous than in *griseilateralis*, and the size is larger as well, being about the same as that of *transfluvialis*. Several of our series show a few scattering white feathers on the throat. This form is represented in the collection by a series of thirty-three specimens, from Villa Braga and Apacy, Rio Tapajóz, Brazil.

According to my views there are thus six recognizable races of *Leucolepis modulator*, as follows:

Leucolepis modulator modulator (D'Orbigny). Bolivia, east of the Andes.

Leucolepis modulator rufogularis (Des Murs). Eastern Peru to the Rio Madeira, Brazil.

Leucolepis modulator salvini (Sharpe). Eastern Ecuador.

Leucolepis modulator rutilans Todd. Upper Amazon (south bank), Brazil.

Leucolepis modulator transfluvialis Todd. Northwestern Brazil, from the Rio Negro to the Amazon, and westward to the base of the Andes in Colombia.

Leucolepis modulator interpositus Todd. From the Rio Madeira to the Rio Tapajóz, northern Brazil.

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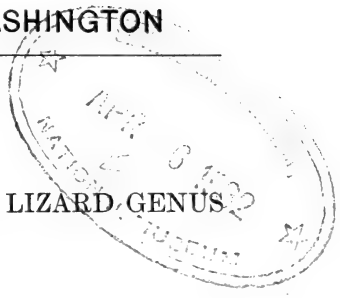

A NEW TEXAS SUBSPECIES OF THE LIZARD GENUS HOLBROOKIA.

BY FRANCIS HARPER.

Field work in southern Texas in 1929 by the Woolston Expedition of the Academy of Natural Sciences of Philadelphia indicated that Padre Island specimens of *Holbrookia propinqua* Baird and Girard represent a hitherto unrecognized subspecies. This may be known as

Holbrookia propinqua stonei, subsp. nov.

PADRE ISLAND HOLBROOKIA.

Type.—No. 19879, Academy of Natural Sciences of Philadelphia; adult male; north end of Padre Island, Texas; taken July 20, 1929, by B. P. Roberts; orig. no. 52b (F. H.).

Diagnosis.—Paler (adult males) and larger (both sexes) than *H. p. propinqua* Baird and Girard.

Geographical range.—Padre Island (and doubtless Mustang Island), Texas.

Description of type.—Scalation similar to that of *H. p. propinqua.* Color in spirits: top of head buffy citrine; ground color of upper parts (including limbs and tail) olive-gray; dorso-lateral region with numerous white spots, having a maximum diameter of about 1 mm.; these spots more or less equally spaced and with a tendency toward arrangement in oblique rows; spots practically absent from a median dorsal area 4–5 mm. wide, but extending on to femur and basal part of tail; otherwise, upper side of limbs with scarcely a trace of spots or bars; two oblique dense black bars on each side, 5–6 mm. in length and 1.5 mm. in maximum width; the anterior bar just reached by the appressed elbow; lower jaws and throat faintly marked with deep gull gray; rest of under parts white.

Total length, 133 mm.; snout to vent, 58; tail, 75; hind leg, 46; hind foot, 22; width of head, 11; femoral pores, 14 on each side.

Remarks.—Other adult males from Padre Island are very similar in coloration, but some of them show the following additional characters: faint traces of about 11 pairs of dorso-lateral blotches, extending from nape

to basal part of tail; one or two additional but smaller oblique black bars on the side; and very faint bars on the limbs. In several the deep gull gray of the throat region is more pronounced, becoming an almost solid color and extending to the front of the shoulder. The extreme and average measurements of five adult males (including the type) are: total length, 125–141 (131.8); snout to vent, 51–59 (55.9); tail, 73–82 (75.9); hind leg, 45–47.5 (46.2); hind foot, 22–23 (22.3); width of head, 10–11 (10.4); femoral pores, 12–15 (13.7). (Another male, not included in the above measurements, has as many as 18 femoral pores.)

Two adult females are scarcely distinguishable from adult mainland females except by larger size. Color in spirits: top of head as in adult male; median dorsal area light drab to drab-gray, changing to light olive-gray on upper sides; paired oblique rows of faint, tiny white spots (in one specimen only) in dorso-lateral region, from nape to basal part of tail; no trace of oblique lateral bars; under parts as in males, but lower sides washed with reddish (noted in fresh specimens and still somewhat apparent in preserved specimens); no bars on limbs. Measurements of two adult females: total length, 123, 121; snout to vent, 59.5, 59; tail, 63.5, 62; hind leg, 42.5, 41; hind foot, 21, 19.5; width of head, 11.5, 11.5; femoral pores, about 11 (perforated scales).

In three immature specimens (about 52–71 mm.), representing both sexes, the paired dorso-lateral blotches are slightly evident, each being bordered posteriorly by an oblique row of tiny white spots. This pattern probably represents an ancestral type of coloration; it is as fully pronounced in the immature insular specimens as in mainland specimens of equal age. In fact, young representatives of the two subspecies are not readily distinguishable, unless perhaps by the slightly larger average size of the insular form.

The average length of adults of *stonei*, of both sexes, exceeds that of mainland adults by more than ten per cent. In his monograph of the genus, Schmidt (1922, p. 714) refers to an unspecified number of specimens of *H. propinqua* from Padre Island, but gives no hint of their distinctness from the mainland form. His maximum measurement of length (140 mm.) applies, I suspect, to a Padre Island specimen.

The difference in coloration between adult males of the two subspecies was striking enough to be appreciated at once in the field.

The subspecific name is bestowed as a mark of esteem for Dr. Witmer Stone, of the Academy of Natural Sciences of Philadelphia, whose contributions have added much to our knowledge of the vertebrate fauna of Texas.

Specimens examined.—Padre Island, Texas, 9 males, 4 females.

Holbrookia propinqua propinqua Baird and Girard.

Southern Texas Holbrookia.

Although Schmidt (1922, p. 714) considers this species satisfactorily defined by Cope (1900, p. 289), the latter's color description is not as detailed as might be desired, and his measurements are only comparative. The following notes are based upon alcoholic specimens, primarily those

from Flour Bluff, since others from Sarita and Norias happened to be discolored in the preserving fluid used in the field. (The stomachs of birds that have been feeding on the purple fruit of *Opuntia* should not be placed in the same container with herpetological specimens.)

Four adult males: top of head more or less completely mummy brown; dorsal ground color varying from olive-gray to dark olive-gray; about 10 pairs of deep mouse gray dorso-lateral blotches, extending from nape to basal part of tail (almost wanting in one specimen); numerous white spots above as in *H. p. stonei*, but maximum diameter only about .6 mm., and scarcely evident on femur; upper side of limbs (especially hind limbs) with faint dark bars; two oblique black bars on each side, 4–4.5 mm. in length and 1 mm. in maximum width; lower jaws, throat, and upper breast faintly or heavily marked with deep gull gray; rest of under parts white.

One adult female: upper parts glaucous-gray; a faint trace of bars on upper side of hind limbs; no trace of oblique lateral bars; lower sides washed with reddish (noted in several fresh specimens, and still somewhat evident in preserved specimens); under parts white.

Several immature specimens (54.5–59 mm.) of both sexes show no sexual color differences. Except for slightly smaller average size, they are practically indistinguishable from immature specimens of *stonei*. As in immature specimens of that form, there are faint indications of paired dorso-lateral blotches, with accompanying oblique rows of white spots.

Since the measurements given by Schmidt (1922, table) obviously pertain in part to *H. p. stonei*, the following measurements of specimens of *H. p. propinqua* from Flour Bluff, Sarita, and Norias are supplied. Five adult males: total length, 102–121 (110.8); snout to vent, 42–47 (45.3); tail, 60–75 (65.5); hind leg, 36–40.5 (38.5); hind foot, 17.5–19.5 (18.6); width of head, 8.5–9.5 (8.7); femoral pores, 14–17 (15.4). Three adult females: total length, 102.5–115 (107.2); snout to vent, 48–51 (49.2); tail, 54.5–64 (58); hind leg, 34–38.5 (36.7); hind foot, 17–18 (17.3); width of head, 9–9.5 (9.3); femoral pores, 11–16 (14.2).

Specimens examined (all from Texas).—Flour Bluff, Corpus Christi Bay, 8 males, 4 females; Sarita (Kenedy County), 2 males, 2 females; Norias (Kenedy County), 2 males.

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THE SCIENTIFIC NAME OF THE COMMON SOLE OF THE ATLANTIC COAST OF THE UNITED STATES.

BY CARL L. HUBBS.

The most common and best known of the soleid fishes of the United States has passed almost consistently as *Achirus fasciatus* (Lacépède), since this name was adopted by Jordan and Goss (1889 : 315), and by Jordan and Evermann (1898 : 2700). Recently, however, doubt has been cast on the applicability of either the generic or specific name to this species. It is the purpose of the present note to consider the recent claims, and to review the problem from the standpoint of the early writers as well.

The generic name will be considered first. The genus *Achirus* was established by Lacépède in his *Histoire Naturelle de Poissons* (1802 : 658). Lacépède divided his genus into two subgenera; neither of which he named. The second subgenus was made to include two sinistral species, now not classed in the Soleidae, as that family is at present delimited. As neither of these species of the second subgenus has ever been considered as the type of *Achirus*, attention may be restricted to the species of the first subgenus, namely *Achirus barbatus*, *A. marmoratus*, *A. pavoninus* and *A. fasciatus*.

The first subdivider of the genus was Kaup (1858), who restricted the genus to the first three species named, and placed *fasciatus* (and the related *lineatus*) in a new genus *Grammichthys*. This action was known to Jordan and Goss (1889 : 308), Jordan and Evermann (1898 : 2693) and others, but has been interpreted as determining the status of the generic name only by Chabanaud (1930 : 263). Emphasizing this point, and the fact that *barbatus*, the first species listed by Lacépède, is considered a doubtful synonym of *marmoratus*, which species with *pavoninus* constituted the genus *Pardachirus* Günther (1862 : 478), Chabanaud (1930 : 262) replaced *Pardachirus* with *Achirus*. In so doing he removed *Achirus* from the group

generally called Achirinae (for which he substituted Trinectinae); and applied it to Indopacific rather than New World species.

Fortunately this action appears unnecessary, and invalid, because Article 30 I (d) of the International Code states: "If a genus, without originally designated (see *a*) or indicated (see *b*) type, contains among its original species one possessing the generic name as its specific or subspecific name, either as valid name or synonym, that species or subspecies becomes *ipso facto* type of the genus. (Type by absolute tautonymy.)" The genus did contain the specific name *achirus*, for Lacépède (1802 : 662) listed "*Pleuronectes achirus* Linné, *Syst. naturae X*, I, p. 268, *n.* 1, 3," as a synonym of his *Achirus fasciatus*. The fact that the name *achirus* was (presumably) wrongly synonymized with *fasciatus*, or that Lacépède presumably had never seen the true *achirus* appears irrelevant, despite the opposite view of Chabanaud, as the Rule quoted makes no provision for such an exigency.

Therefore, the Code requires that *Pleuronectes achirus* Linné be the type of the genus, as claimed by Jordan (1917 : 65, and 1923 : 5) and Myers (1929 : 37). The fact that *Pleuronectes achirus* was named in the first definite type designation for *Achirus* (Jordan and Gilbert, 1883 : 841) is probably not to be considered as significant, nor apparently, is Jordan and Goss' designation of *Achirus fasciatus* as the type (1889 : 308) to be considered, however much we might wish this could be done. In this connection, however, it should be noted that both Lacépède and Jordan and Gilbert placed *achirus* in the synonymy of *fasciatus*.

If the identification of *Pleuronectes achirus* Linné with *Solea gronovii* Günther (1862 : 472) be accepted, as made by Jordan and Goss (1889 : 311), Jordan and Evermann (1898 : 2695), Jordan (1923 : 7), Myers (1929 : 36), and by Chabanaud in 1930 though not in 1928, then it becomes necessary to synonymize *Baiostoma* with *Achirus* and to employ *Trinectes* for *fasciatus* and its allies. This is the course adopted by Myers, and appears unescapable, if Chabanaud's separation of the genera (1928) is accepted, as I think it should be. The view that *Trinectes scabra* Rafinesque is a recognizable synonym of *Achirus fasciatus*, and that the generic name *Trinectes* is therefore available for the species, seems acceptable. Chabanaud (1930) reprinted Rafinesque's account, which is merely "A new genus of fish near to *Achirus*, found in the River Schuylkill; it has only three fins, dorsal, and anal and caudal." Considering the locality, which is permissible according to Opinion 52 of the International Commission on Zoological Nomenclature, this account certainly applies to *Achirus fasciatus* and only to that species.

If *Pleuronectes achirus* be regarded as not identifiable with *Solea gronovii*, then both the specific and generic name, as pointed out by Myers (1929) are apparently unusable, because they are not identifiable with even as much possibility with any other species and genus. In order to avoid dropping the time-honored name of *Achirus*, the customary identification of *P. achirus* ought to be maintained if possible.

New testimony as to the *specific* name of our common sole is introduced by Chabanaud (1930 : 262), who has examined the type of *Pleuronecte maculatus* Bloch and Schneider (1801 : 157) and pronounces it identical with

Achirus fasciatus Lacépède (1802 : 662). He therefore regards the assigned type locality of *maculatus* ("Habitat ad Tranquebariam") as an error. No such species can now be identified in the Indian fauna (Norman, 1928 : 186). The original description is as to be expected very weak and incomplete, but applies fairly well to *fasciatus*. The distinct and rounded caudal fin, the absence of pectoral fins, coupled with the moderately low number of dorsal and anal rays (admitting that the author counted the rays somewhat too few according to later accounts), the entirely cirrate lower lip, the presence of teeth on the inferior surface of the maxilla, the straight lateral line and the black-blotched coloration, is a fairly distinctive characterization of the species.

The redescriptions of the type of *Pleuronectes maculatus* by Day (1877 : 427) and Chabanaud seem to confirm the view that it is referable to the species called *Achirus fasciatus* one year later. The determination that the blind surface was black-spotted apparently cinches the identification.

Out of harmony with the identification of *maculatus* with *fasciatus* is the number of pelvic rays, which are given by Bloch and Schneider as 5 and by Day as 6 in the type of *maculatus*, whereas *fasciatus* has 3 to 5, usually 4, pelvic rays, according to Chabanaud (1928 : 9). But must be borne in mind that the type was a skin covered with varnish, according to Day, and that the rays could not be exactly enumerated according to Chabanaud. It might be very difficult to distinguish between pelvic and anal rays, in such a specimen, where the fins are conjoined.

The scientific name of our sole should on these premises stand as *Trinectes maculatus* (Bloch and Schneider). Chabanaud's identification, in 1930, of our species with *lineatus*, appears inadmissible, in view of the evidence presented by Jordan and Goss in 1889 (p. 312), and since accepted by almost all authors.

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ACCOUNT OF THE PASTIME, A WASHINGTON PERIODICAL, LARGELY OF NATURAL HISTORY, PUBLISHED IN 1883–1885.

BY W. L. McATEE.

Among the treasures of the Division of Birds, U. S. National Museum, is an incomplete set of a little journal, The Pastime, that aside from its rarity derives its value chiefly from natural history contributions by young men who later made their mark in science. The late William Palmer presented the nucleus of the set comprising examples of 9 of the probable 20 numbers that were published. Through the efforts of Dr. C. W. Richmond and the writer, the set has been increased to representations of 16 issues (3 of them incomplete). Washington Topham, referred to later in this account, generously presented the only copy in his possession, which fortunately was of a number previously missing from the set. Miss Margaret Lewis, sister of W. C. Lewis, founder of The Pastime, kindly supplied loose sheets from which it was possible to assemble one complete issue additional to the existing set. Every effort has been made to trace copies and to collect information about The Pastime with the results here presented.

We may deal first with the business history of The Pastime. It was launched in July, 1883, by W. C. Lewis and C. E. Clifton, Editors and Publishers, as "A repository for the literary efforts of our young people, devoted to sports and pastimes, natural history, etc." Mr. Washington Topham has kindly supplied the following information about this little journal. In those days there was rather a fad among young men of gathering together printing equipment and producing either occasionally or regularly leaflets or small magazines, the principal outlet for

which was exchange among themselves. Mr. Topham was one of these embryo typographers and he says: "The Pastime was first printed by me in my amateur printing office at 1010 Massachusetts Avenue, and after sale of office to my dear friend Lewis, at his home 916 Rhode Island Avenue N. W. * * * Mrs. Topham and I used to be contributors to it." Further evidence of Mr. Topham's connection with The Pastime is visible in the form of an advertisement of his father's well known business in trunks and leather goods, on the back page of the first issue, the only advertisement to appear in any number of the periodical that we have seen.

With Volume 2, a change was made in the subheading of The Pastime to "A monthly journal devoted to the interests of our American Youth and all others who may appreciate its efforts." W. C. Lewis and C. E. Clifton are now listed as Editors. In No. 6, June, 1884, the suspension of the journal is announced, but new blood permitted a reorganization which is explained in the first issue of Volume 3. The subhead undergoes another change to "A monthly journal of Literature, Natural History, Field Sports, etc.," with W. C. Lewis as Editor, and E. C. Bryan and William Palmer as Associate Editors. A leaflet laid in Volume 3, No. 1, July, 1884, distinguishes these signatories as proprietors and announces that "In the future equal space will be devoted to Natural History and General Literature." They hope their humble endeavors may be appreciated and state the subscription price as 50 cents per year. Hugh M. Smith's Natural History department, which persisted through the first two volumes, is discontinued but Smith remained a contributor to the end.

Volume 3, it is evident also, saw a change in the "personally produced" policy as Nos. 1 and 2 bear the legend "Gibbons Print," No. 3 "Wills Print," Nos. 4, 5 and 7 "Henkle & Co. Print" (in issue No. 4, the three producers are ranked equally as Editors). Volume 3, No. 7, January, 1885, appears with a cover, with the subheading "devoted to Literature and the Sciences" and the editorial definition changed to "an amateur monthly journal devoted to the sciences in general"; the subscription price is raised to One Dollar. On the cover we note that Edward C. Bryan is Editor, and on the editorial page we read: "the originator of the paper and also one of the associate

editors have withdrawn, leaving only myself to conduct affairs." The editor was constrained to remark also "it is impossible to keep the paper alive on wind." Such symptoms presaged the end and one more issue, Vol. 3, No. 8, February, 1885, appears to have been the last.

The particular interest that The Pastime has for members of the Biological Society of Washington is that throughout its career it was in part a natural history journal. The younger scientists of the city found in it an outlet for comment, brief notes, and even longer contributions, which was agreeably unsupervised by the scientific pundits of the period. Hugh M. Smith, then an undergraduate, later U. S. Commissioner of Fisheries, was in charge of the Natural History Department of Volumes 1 and 2, and contributed to most of the issues of Vol. 3. In the initial issue he said, "It shall be our purpose in this department of the paper to present Natural History in its most attractive form, not indulging in any very scientific treatment of natural topics, and omitting, when expedient, all technical terms. Short communications on live subjects are solicited."

William Palmer, then an assistant to his father, Joseph Palmer, and later Chief Taxidermist of the U. S. National Museum, a Fellow of the American Ornithologists' Union, and a recognized authority in several branches of natural history, became associate editor of The Pastime in July, 1884, and at once began, under the heading Avifauna Columbiana, a series of notes of additions and corrections to the work of Elliott Coues and D. Webster Prentiss, published under the same title as Bulletin 26 of the National Museum (1883).

The restiveness of these youngsters under the reign of Coues not only is thus made evident but it is given explicit expression in the July, 1884, issue as follows: "It is to be regretted that Dr. Coues in preparing his list of birds did not avail himself more of the experience of our younger ornithologists. * * * There are many corrections and additions that we can suggest, which it is our purpose to note in our future numbers of this paper * * *."

In the August, 1884, issue the further interesting statement of policy is given "Being aware of the fact that there is no journal published in Washington wherein the ornithological and other natural history interests of the District are considered and

promoted, we have undertaken the task of opening the columns of our paper to * * * communications * * * on such subjects, believing that by doing so we will prove of no small use to the student and collector." In all probability the development of the Proceedings of the Biological Society of Washington, at this period, in part satisfied the need here expressed and may have been one of the factors in bringing about the demise of The Pastime.

Signed articles on natural history in available parts of The Pastime were contributed by Ed. C. Bryan, F. H. Knowlton, C. Lehnert, F. A. Lucas, L. M. McCormick, Wm. Palmer, F. A. Reynolds, John A. Ryder, Hugh M. Smith, and Lester F. Ward. Several men of great scientific reputation developed from these young naturalists but, alas, all but one of them (Smith) have passed on.

A systematic review is here given of the Natural history content of the available file of The Pastime, special attention being called to notes of local interest.

Vol. 1, No. 1, July, 1883.

Collecting of plants advised; National Museum received a shipment of Carolina paroquets *alive;* bald eagle (some local bearing); fence lizard a pet.

Vol. 1, No. 2, August, 1883 (only first 2 pages identified).

Nothing.

Vol. 1, No. ? date ? (previous to No. 5, November).

General essay on "The Avi-fauna of the District," nothing definite.

Vol. 1, No. 5, November, 1883.

Probablity of establishment of a Zoological Garden; miscellany mostly not of local interest, but Hornaday's group of orangs in Museum pronounced "one of the best pieces of taxidermy we have ever seen," gives an "accurate idea of the personal appearance of our ancestors"; "Quail and Quail Shooting."

Vol. 1, No. ? (probably 6, Dec. 1883).

The mockingbird; miscellany; "Blue-winged and Green-winged Teal," with general local reference.

Vol. 2, No. 2, February, 1884.

Curious facts about some trees; miscellany, none of local interest.

Vol. 2, No. 3, March, 1884.

The purple finch; prairie dogs; gnats.

Vol. 2, No. 4, April, 1884.

Termites; second records of Bewick's Wren and the Yellow Rail for the vicinity; capture also of a Loggerhead Shrike "of which but very few have been taken here"; notice of publication of a second edition of Coues and Prentiss' Avifauna Columbiana; miscellany.

Vol. 2, No. 5, May, 1884.

The bobolink; miscellany.

Vol. 2, No. 6, June, 1884.

The catbird; positive local record of breeding of the blue yellow-backed warbler not so recorded by Coues and Prentiss; first collecting of hooded warbler and of Lincoln's sparrow; ruffed grouse still to be found in the Soldiers' Home Grounds; "recently a pair of silver foxes have made their appearance"; miscellany.

Vol. 3, No. 1, July, 1884.

Avifauna Columbiana (explained in the August issue as "notes of additions and corrections to Coues & Prentiss' list" by William Palmer), notes on 8 species "not enumerated in the recently published list," 4 others "first recorded as taken here, though mentioned in Coues and Prentiss' list as having been seen here"; and another 3 of which the second instance of capture is noted; Dipping for Shad; references to publications on Flora Columbiana, "It is doubtful if there will ever be any great addition made to this list," a bit of that ever risky matter, prophecy, as the number of higher plants given namely 1294, was increased to 1630 in 1919,[1] a number further materially expanded in 1930[2]; carnivorous plants with local record for *Sarracenia purpurea*; red cross-bills collected at Laurel, Md., June 30, by George Marshall (p. 8), is a record not included in the latest list[3] of birds of the region; *Hydrophyllum canadense*, a new plant for the Flora; additional record for *Heliotropium europaeum*.

Vol. 3, No. 2, August, 1884.

Avifauna Columbiana, continued, amending the Coues and Prentiss list with respect to 18 species. Of the American Egret Palmer says, "I have known this bird to breed in Arlington Cemetery" (p. 13); "The Decrease of Shad and Herring in the Potomac"; *Clethra alnifolia* added to the Flora; porpoise seen above Aqueduct Bridge; albino robin nestlings; miscellany.

Vol. 3, No. 3, September, 1884.

"The 'Coon"; plume trade; "The Linden Tree"; interesting plant localities about Washington; liquorice; miscellany including local bird records.

Vol. 3, No. 4, October, 1884.

"A botanical trip up the Anacostia"; bird records for Gainesville, Va.; "The Ferns of Washington and Vicinity"; *Aspidium spinulosum* added to Flora; *Corallorhiza multiflora* recorded; "Arrival of Spring Birds"; "Notes on Birds found on Cobb's Island, Va., between July 9 and July 29, 1884. Part 1—Land Birds" (19 species); miscellany including local bird records.

Vol. 3, No. 5, November, 1884 (incomplete).

"Chinese smoking opium"; "Potato"; local squirrels; 3 species addi-

[1]Contr. U. S. Nat. Herb. 21, 329 pp., 42 Pls., 1919.

[2]Proc. Biol. Soc. Wash. 43, pp. 21–54, March, 1930.

[3]Proc. Biol. Soc. Wash., 42, pp. 1–80, March, 1929.

tional to Part 1 of the Cobb's Island list; and Part 2—Water Birds (28 species).

Vol. 3, No. 7, January, 1885.

"The Nectar Glands of the Catalpa Tree"; "Guano Bird's Egg"; "Water Snake"; account of meetings of the Biological Society of Washington.

Vol. 3, No. 8, February, 1885.

"The Distribution of Seeds by the Wind"; "A list of recent Land and Fresh-water Mollusks of the District of Columbia and Vicinity." C. Lehnert, the author, says 36 more species and varieties are recorded than in Girard's list of 1855. This catalog has never been superseded; miscellany including local bird records.

The set of The Pastime in the Division of Birds, U. S. National Museum, as at present collated includes:

Vol. 1, No. 1, July, 1883.
Vol. 1, No. 2, August, 1883 (incomplete).
Vol. 1, No. 5, November, 1883.
Vol. 1, No. 6 (?) (incomplete).
Vol. 2, No. 2, February, 1884.
Vol. 2, No. 3, March, 1884.
Vol. 2, No. 4, April, 1884.
Vol. 2, No. 5, May, 1884.
Vol. 2, No. 6, June, 1884.
Vol. 3, No. 1, July, 1884.
Vol. 3, No. 2, August, 1884.
Vol. 3, No. 3, September, 1884.
Vol. 3, No. 4, October, 1884.
Vol. 3, No. 5, November, 1884 (incomplete).
Vol. 3, No. 7, January, 1885.
Vol. 3, No. 8, February, 1885.

If this brochure reaches any one who can help to complete the set or give further information about the journal their cooperation will be greatly appreciated.

Inquiry at Washington libraries has developed that there are no specimens of The Pastime in the Library of Congress, nor in those of the Smithsonian Institution and the Department of Agriculture. The National Museum main library has copies of Vol. 3, Nos. 1 and 4, and the Washington Public Library one of Vol. 3, No. 1.

Vol. 45, pp. 29–38 April 2, 1932

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

PRELIMINARY DESCRIPTIONS OF NEW SPECIES OF JAPANESE CRABS.

BY MARY J. RATHBUN.[1]

The crabs here described were collected chiefly by the steamer *Albatross* of the Bureau of Fisheries in 1900 and 1906.

FAMILY MAJIDAE.

Achaeus stenorhynchus, sp. nov.

Type.—Male, U. S. National Museum No. 48255, Ose Saki Light, N. 10° E., 8 miles (32° 28′ 50″ N., 128° 34′ 40″ E.), 139 fathoms, gray sand, broken shells, temp. 52.9° F., Aug. 10, 1906, station 4900, *Albatross.*

Carapace with a short "neck," a few strong spines and a rostrum with very slender horns. Two median spines, cylindrical and truncate; the larger one prolongs the conical cardiac region, the other, slenderer, is on the hinder gastric region. Two spines above the interval between the bases of the last two legs; they are triangular, compressed and directed backward, upward and a little outward. Various tubercles on gastric and branchial regions. Hepatic protuberance subrectangular. Rostral spines contiguous. A spinule at upper extremity of eye. Chelipeds stout especially the merus; manus swollen at middle; fingers narrowly gaping. Dactyli of first two pairs of legs nearly straight, of last two pairs curved. A stout, sharp spine on either side of sternum, opposite chelipeds. A spine on first abdominal segment; last four segments with a blunt median elevation which on the seventh segment, fused with the sixth, is bilobed. Length of carapace 11.7, width 8 mm.

Achaeopsis atypicus, sp. nov.

Type.—Female, U. S. National Museum No. 48206; Sata Misaki Light, N. 84° E., 8.5 miles (30° 59′ N., 130° 29′ 50″ E.), 152 fathoms, rocky, temp. 56° F., Aug. 16, 1906, station 4933, *Albatross.*

Carapace very convex, hepatic region inclined obliquely downward. Four large spines with conical bases and long slender tips; one cardiac; three gastric of which two are lateral and in front of the median spine; a

[1]Published with the permission of the Secretary of the Smithsonian Institution.

small branchial spine above lateral angle; posterior and postero-lateral margins spinulous or spinous. Front strongly deflexed; rostrum a small lobe with denticulate margin and a slender median spine; supraorbital hood suberect. Outer terminal spinule on basal antennal article visible from above. Chelipeds with spinous margins; fingers one and one half times as long as palm. Legs similar. A spine on median line of first abdominal segment and a spinule on each of the next five segments; the fused seventh segment is covered with spinules. Length of carapace 8.4, width 6 mm.

Cyrtomaia septemspinosa, sp. nov.

Type.—Male, U. S. National Museum No. 47297, Tsurikake Saki Light, S. 84° E., 17.5 miles (31° 39′ 40″ N., 129° 20′ E.) 391 fathoms, gray globigerina ooze, Aug. 12, 1906, station 4912, *Albatross.*

Dorsal spines seven only, branchial spine longest, next the protogastric and cardiac (paired) are subequal, median gastric shortest. Carapace granulate; hairs on ridges leading back from rostrum toward protogastric spines. Median rostral spine at an acute angle with lateral pair and visible from above. Orbital spines as in *C. horrida.*[2] Merus of last two pairs of legs without spines. Median length of carapace 23.6, width (spines excluded) 26.6 mm.

Pleistacantha terribilis, sp. nov.

Type.—Male, U. S. National Museum No. 48263, Ose Saki Light, N. 22° E., 6 miles (32° 31′ 10″ N., 128° 33′ 20″ E.), 139 fathoms, gray sand, broken shells, Aug. 10, 1906, station 4903, *Albatross.*

Carapace covered with long slender unequal spines mixed with short spines. Regions fairly well marked. Supraocular spines two, one at the summit very long, suberect and directed a little outward and forward, the other at the posterior angle shorter and directed outward and a little forward; between supraocular and postocular spines two long spines directed outward; three long hepatic spines forming a triangle. Horns widely divergent at base, armed on all sides. Interantennular spine long, very slender, straight and sharp-pointed, inclined forward and downward at an angle of about 45° with the rostrum. Chelipeds and legs armed with many spines mostly long; palms enlarged. Near *P. cervicornis* Ihle[3]; rostral horns shorter, one-third as long as remainder of carapace; interantennular spine straight; chelipeds stout, palm of male twice as long above as high at distal end; dactyli of legs armed beneath on the proximal half with small spinules. Median length of carapace 14, width 10 mm.

Pleistacantha simplex, sp. nov.

Type.—Male, U. S. National Museum No. 48251, Ose Saki Light, N. 29° E., 5.5 miles (32° 32′ N., 128° 32′ 50″ E.), 106 fathoms, gray sand, broken shells, pebbles, temp. 55.9° F., Aug. 9,1906, station 4893, *Albatross.*

Small. Dorsal surface covered with sharp granules. Rostrum short,

[2]Rathbun, Proc. U. S. Nat. Mus., vol. 50, 1916, p. 532.

[3]Zool. Anz., vol. 93, 1931, p. 161.

horns slightly upturned, widely separated at base; outward and forward pointing spine on proximal half of outer margin, followed by a series of slender spinules continued half way over the eye stalk, and by a slender sinuous spine. Postocular spine shorter. Anterior hepatic spine directed more forward than outward. Interantennular septum with two well separated short spines scarcely visible from above. Eyestalks long and slender. Chelae of male stout. First ambulatory leg two and one-half times as long as carapace. Median length of carapace 10, width 7.3 mm.

Pugettia quadridens pellucens, subsp. nov.

Type.—Male, U. S. National Museum No. 49925, Omai Zaki Light, N. 17° E., 14.5 miles, 34–37 fathoms, mud, gravel, rock, May 16, 1900, station 3730, *Albatross.*

Differs from typical *quadridens* in the thin sharp edge of the preorbital hood, postocular cup, upper and lower margins of arm, three crests of wrist and upper margin of palm; in the greater length of the rostrum; in the flattened spines of the hepatic and branchial regions; in the shape of the hepatic sinus which is deep and rectangular instead of shallow and rounded; and in the greater convexity of the upper margin of the palm. Median length of carapace 12.4, width without spines 9.2 mm.

Pugettia kagoshimensis, sp. nov.

Type—Male, U. S. National Museum No. 48253, Sata Misaki Light, N. 58° E., 4.5 miles (30° 57′ 20″ N., 130° 35′ 10″ E.), 103 fathoms, stones, temp. 60.6° F., Aug. 16, 1906, station 4935, *Albatross.*

Surface except fingers covered with a flat pavement of round setae. Rostral horns more than half as long as remainder of carapace and diverging at an angle of about 50°. Hepatic spines very long, slender, directed outward and upward. Branchial spines a little shorter, conical. Cardiac region rising in a large high protuberance flattened antero-posteriorly and slightly bifid at tip. Above posterior margin a similar much smaller protuberance flattened sideways and more deeply bifid. Median length of carapace 11.7, width, excluding spines, 7.2 mm.

Pugettia nipponensis, sp. nov.

Type.—Male, U. S. National Museum No. 48254, Doumiki Saki, N. 19° W., 4.5 miles, 61 fathoms, green mud, sand, June 5, 1900, station 3771, *Albatross.*

Carapace concealed by short dense pubescence; when removed the carapace is seen to be rather lumpy; cardiac region high, pyramidal, blunt; three posterior gastric tubercles, one larger, median, the others a little anterior; two tubercles near inner branchial angle, a short spine at outer angle and a tubercle in same transverse line; an elongate, curved tubercle on either side of posterior cardiac region; hepatic produced laterally in a conical spine, a tubercle on upper surface; one intestinal tubercle. Rostral horns little divergent, their outer margins parallel. Preorbital hood acutely pointed and separated by a rounded sinus from the small acute postorbital tooth. Median length of carapace 19, width without spines 14 mm.

Pugettia similis, sp. nov.

Type.—Male, U. S. National Museum No. 49531, Ose Zaki, S. 36° W., 0.8 mile, 65–125 fathoms, temp. 66° F., volcanic sand, shells, rocks, May 11, 1900, station 3716, *Albatross.*

Near *P. minor* Ortmann[4]; general surface smooth, hepatic and branchial spines equally slender; cardiac region conical, not spine-tipped; intestinal spine short and blunt; a branchial tubercle in transverse line with lateral spine and cardiac elevation; four small, low gastric tubercles, two median in a transverse line slightly in front of the posterior median tubercle. First movable article of antenna about five times as long as wide. Chelipeds narrow, palms bluntly rounded below, carinate above, becoming blunt at distal end. Median length of carapace 18.3, width exclusive of spines 12.9 mm.

Chionoecetes japonicus, sp. nov.

Type.—Male, U. S. National Museum No. 46640, Sawa Zaki, N. 23° W., 13.6 miles (Sado Island) (37° 37′ N., 138° 19′ E.), 536 fathoms, green mud, temp. 32.4° F., July 19, 1906, station 4820, *Albatross.*

Near *C. tanneri* Rathbun[5]. Animal smoother. The dorsal surface is tuberculate or granulate rather than spinous, especially in the old. Posterior branchial—nearly transverse—row of prominences very low, composed of groups of granules; anterior row with clusters further apart; the angle of meeting of the branchial crests at the postero-lateral margin is 60°, marked by a short spine, the first of a row which extends forward along the lateral margin and then downward to the buccal cavity. Tubercles of posterior margin low and blunt. Rostral teeth broader than the distance between tips; inner margins sinuous. Entire length of carapace 91.7, width without spines 91.4 mm.

Rochinia debilis, sp. nov.

Type.—Immature female, U. S. National Museum No. 49572, Joga Shima Light, N. 15° W., 4.2 miles (35° 04′ 10″ N., 139° 38′ 12″ E.), 197 fathoms, green mud, coarse black sand, pebbles, temp. 47.6° F., Oct. 26, 1906, station 5091, *Albatross.*

Carapace armed with only two long spines, situated at the lateral branchial angles, directed outward and obliquely upward; a short spine on the intestinal region; a conical elevation on the hepatic region terminating in a short spine; a tubercle on the summit of the rounded cardiac region; three low gastric elevations, of which the two lateral are each surmounted by a small tubercle. Rostrum entire for nearly one-third its length, horns slight curved, widely divergent, very slender in their distal half. Preorbital hood terminating in a non-prominent, subacute tooth, directed outward and a little upward; orbital sinus broad; postocular tooth narrow, in dorsal or side view. Basal article of antenna narrowing distally, surface concave, a very small blunt tooth at the antero-external angle. Median length of carapace 11, width without spines 7.3 mm.

[4]Zool. Jahrb. vol. 7, 1893, p. 44.

[5]Proc. U. S. Nat. Mus., vol. 16, 1893, p. 76, pl. 4, figs. 1–4.

Maja japonica, sp. nov.

Type.—Male, U. S. National Museum No. 48252, Seno Umi, N. 13° W., 1.5 miles, 41–31 fathoms, volcanic mud, sand, rocks, May 7, 1900, station 3702, *Albatross.*

Carapace considerably swollen, constricted behind hepatic regions; four median spines, of which the anterior and posterior are very small and two are gastric, one cardiac, one intestinal; one dorsal branchial spine, about four marginal spines, the hepatic and first gastric spine stout, next spine very small, last one long and in transverse line with cardiac spine; orbital spines broad, flat, acute, well separated, the postocular spine as advanced as the tip of the spine on the preorbital hood; rostral spines moderately divergent, about one-fifth as long as remainder of carapace; surface densely granulate, granules not touching one another. Median length of carapace 16.7, width without spines 13.1 mm.

Choniognathus[6], gen. nov.

Carapace hexagonal, constricted behind the hepatic region; regions deeply separated. Rostral horns short. Orbits well defined; preorbital hood without anterior spine; upper margin with two sinuses; postocular cup continuous with suborbital lobe. Basal antennal article narrow, a tooth on outer margin. Merus of outer maxilliped fused with the ischium for outer half of its width. Chelipeds (of female) no more massive than ambulatory legs, which are short.

Choniognathus koreensis, sp. nov.

Type.—Female, U. S. National Museum No. 48204, Oki Shima, S. 70° W., 7.5 miles (34° 17′ N., 130° 15′ E.) 59 fathoms, fine gray sand, broken shells, Aug. 2, 1906, station 4879, *Albatross.*

Densely covered with hair; regions of carapace deeply separated by smooth furrows; elevations covered with tubercles and a few cylindrical blunt spines: thirteen tubercles on mesogastric region, nine on each protogastric lobe, two dorsal hepatic, ten cardiac tubercles, and a central spine, a cluster of six intestinal tubercles and on either side a longitudinal row of one large tubercle and one spine, the latter above the posterior angle of the carapace; about thirty smaller branchial tubercles and about five spines or larger tubercles of which one is at the summit or near the inner angle of the region, one is further back and three are on the antero-lateral margin. A triangular tooth on hepatic margin. Rostral horns broad at base, rapidly diminishing, outer margins slightly divergent, interspace a broad U. Median length of carapace 8.7, width 6 mm.

Family Retroplumidae.

Retropluma denticulata, sp. nov.

Type.—Ovigerous female, U. S. National Museum No. 46305, Suruga Gulf, Omai Saki Light, S. 37.5° W., 6.4 miles (34° 40′ 45″ N., 138° 18′ 30″ E.), 47 fathoms, gray mud, temp. 74.9° F., station 5074, *Albatross.*

[6] χωνεύω, to fuse; γνάθος, jaw.

Carapace narrow, transversely suboval; lateral margins very finely denticulate, but without a notch or sizable teeth; upper surface crossed by three smooth ridges, the anterior one arched forward on either side behind the antero-lateral tooth, second ridge nearly straight, third near and almost parallel to posterior margin; space between first and second twice as long as between first and anterior margin, this latter space shorter than that between second and third. A short ridge runs inward from the side-margins at the middle or widest part of carapace; another shorter ridge either side of median line behind rostrum. Chelipeds granulate and hairy on merus, carpus and supero-proximal part of palm; outer surface of palms smooth. Length of carapace including rostrum 8.4, width 10.6 mm.

Family Goneplacidae.

Carcinoplax surugensis, sp. nov.

Type.—Male, U. S. National Museum No. 46165, Suruga Gulf, Omai Saki Light, S. 32.5° W., 12.3 miles (34° 46′ N., 138° 21′ 50″ E.), 148 fathoms, gray mud, temp. 54.6° F., Oct. 16, 1906, station 5073, *Albatross.*

Antero-lateral projections three, the first a blunt tooth next the orbit, its inner margin short and a continuation of the orbital margin, its outer margin convex and separated from the second tooth by a rounded sinus; second tooth about equal in size to first and tipped with a slender spine; distance between second and third projections greater than between first and second; third at lateral angle of carapace, a rather long, regularly tapering spine directed obliquely upward, outward, and forward. Postero-lateral margins strongly convergent. Front sinuous, faintly trilobed, outer lobes more advanced than median; posterior margin of submarginal groove regularly curved; a distinct fronto-orbital notch. Carpus of cheliped with two sharp spines, inner one conical, outer slender; the fine granulation on the manus forms a reticulating pattern; above lower margin of immovable finger a deep groove continued back a little on palm; brown color of fingers on two-thirds their length, but further on prehensile edges. Length of carapace 14, width just in front of lateral spine 18 mm.

Near *C. longimanus* (de Haan)[7], but carapace more uneven, outer orbital tooth trends inward, anterior margin of front more transverse; sulcus in upper orbit ends in an open notch at margin; male abdomen broader and more triangular, chelipeds much shorter and stouter.

Hephthopelta aurita, sp. nov.

Type.—Female, U. S. National Museum No. 46405, Suruga Gulf, Omai Saki Light, S. 37° W., 11.7 miles (34° 44′ 55″ N., 138° 22′ 20″ E.), 284–148 fathoms, gray mud, temp. 44.1° F., station 5072, *Albatross.*

A strong sharp spine on either side of the carapace is a distinguishing feature. Carapace high, its sides converge gradually forward to the spines, in advance of which the sides and front form a regular arch interrupted by the eyes, the corneae protruding; margins bluntly rounded; posterior

[7] *Cancer* (*Curtonotus*) *longimanus* de Haan, Fauna Japonica, Crust., p. 50, pl. 6, fig. 1, 1835.

margin sinuous, a little concave at middle. Cardiac region very tumid; it and the metagastric region are set off by deep grooves. Carapace abruptly deflexed before spines; front truncate. Eyestalks stout, a little constricted before the corneae. Merus of cheliped armed with two sharp spines near middle of lower margin and a strong, subdistal falciform spine on inner margin. Length of carapace 8.6, width 10 mm.

Hephthopelta cribrorum, sp. nov.

Type.—Male, U. S. National Museum No. 46388, Sagami Bay, Joka Sima Light, E. 14 miles (35° 08′ 15″ N., 139° 20′ E.), 292 fathoms, green mud, coarse black sand, temp. 43.7° F., Oct. 23, 1906, station 5086, *Albatross.*

Carapace pubescent and on branchial regions finely frosted. Front almost vertically deflexed, edge visible in dorsal view. Eyestalks strongly constricted next the cornea. Basal article of antennules very large and prominent. Antero-external angle of merus of maxilliped rounded and produced outward. Merus of cheliped with four conical spines on lower margin, a subterminal spine on inner margin, a tubercle at end of inner surface; wrist broad, a long, acuminate, inner spine; hand high, thick, with short upper margin and prominent proximal angles on both outer and inner surfaces so that there is a pronounced lower surface; major dactylus strongly arched. Abdomen with segments three to five fused, angles of three blunt, sides of six parallel except at rounded distal angles. Length of carapace 13.6, width 17.2 mm.

Xenophthalmodes morsei, sp. nov.

Type.—Male, U. S. National Museum No. 46403, Wakanoura, Province of Kii, from Imperial University of Tokyo, through Prof. E. S. Morse.

Shape much as in *X. moebii* Richters[8]; posterior margin more arcuate, orbits cut deeper in carapace. Eyes blind and almost wholly dorsal, the lateral margin of carapace nearly in line with lower margin of orbit. Mesogastric region distinctly defined; surface near lateral borders finely granulate. Epistome deep. Manus high, especially at distal end and with a sharp and finely granulated lower margin. Sixth segment of abdomen widens distally, terminal segment equilaterally triangular; appendages of first segment almost straight, reaching nearly to inner margin of maxilliped. Length of carapace 5.3, width 6.8 mm.

Family Xanthidae.

Heteropanope pearsei, sp. nov.

Type.—Male, U. S. National Museum No. 62910, Misaki, Aug. 5, 1929, A. S. Pearse collector.

Near *H. indica* de Man[9]. Differs as follows: Front granulate, bounded posteriorly by a transverse, granulate and hairy ridge; margin of lobes straight, without tooth at outer ends; protogastric ridges further forward,

[8]See Alcock, Jour. Asiat. Soc. Bengal, vol. 69, 1900, p. 324, for description and synonymy.
[9]Jour. Linn. Soc., Zool., vol. 22, 1888, p. 53, pl. 3, figs. 1 and 2.

one on either side; hepatic ridge more longitudinal than in *indica;* posterior lateral tooth smaller. Fingers of major chela less elongate, fixed finger much shorter. Carpus and manus of minor chela indistinctly granulate, the fine granules of the manus restricted to the upper surface and the proximal end of the outer surface. Fingers brown, the color not entirely covering proximal end. Length of carapace 7, width 9.4 mm.

Family Atelecyclidae.

Trachycarcinus Faxon.

Balss in 1922[10] refers two Japanese specimens to *T. corallinus* Faxon with a reservation. They prove to be different from each other and from the type species. No. 1 of Balss (p. 99, pl. 2, fig. 4) may be called

Trachycarcinus sagamiensis, nom. nov.

Type.—Male, Sagami Bay, 180 meters.

Carapace broader than long, covered all over with pearly granules between which are hairs visible only with a lens. Regions plainly marked by swellings separated by furrows. Rostrum three-toothed, the middle tooth no more advanced than the lateral. Side margins of carapace oval, the forward half not plainly separated from the hinder; on it three large spines ornamented with pearly granules which are in part upstanding. Length 24, width 26 mm. (After Balss.)

No. 2 of Balss (p. 100, pl. 2, fig. 6) may be called

Trachycarcinus balssi, sp. nov.

Type.—Male, U. S. National Museum No. 65063, Cape Rollin, Simushir Island, W. by N., 5 miles (46° 46′ 40″ N., 151° 41′ E.), 107 fathoms, coarse black sand, pebbles, June 24, 1906, station 4801, *Albatross.*

Golden Hind, 40 meters (Balss).

Carapace longer than broad, suboval, widest in front of middle; convex, rough with tubercles or granules having pointed, articulated tips, easily broken off; tubercles arranged in close clusters on median regions, on two inner branchial lobes and three small lateral teeth; elsewhere the tubercles are scattered; regional grooves smooth. Rostrum three-toothed, teeth spinulous on margins, median tooth longer and stouter than the lateral, which point obliquely outward. Orbits with four teeth, rough with spinules, preorbital prominent, suborbital large. Major cheliped massive, palm three times as high as minor palm. Length 22.4, width 19.4 mm.

Family Leucosiidae.

Ebalia gotoensis, sp. nov.

Type.—Female, U. S. National Museum No. 65060, Ose Zaki, S. 55° W., 2.25 miles, 60–70 fathoms, green mud, volcanic sand, ash, May 8, 1900, station 3708, *Albatross.*

Surface closely covered with flattened granules; intestinal region conical,

[10] Arch. f. Naturg., Jahrb. 88, Abt. A, p. 99.

tipped with a tubercle; a similar, smaller cone on the cardiac region, from which a compound row of raised granules extends forward, narrowing toward the front. Front bidentate with shallow V margin. Subhepatic region produced to a sharp granule and followed posteriorly by a rounded sinus; remainder of antero-lateral margin obscurely crenulate, with a prominent granule at lateral angle; posterior margin arcuate, a small shallow lobe at either end. Cheliped slender, twice as long as carapace, merus thickest at proximal third, margins roughly granulate; palm swollen, twice as long as wide, upper edge sinuous; fingers as long as palm. A sharp, three-sided downward-pointing tooth on penultimate segment of male abdomen. Length of carapace 7, width 8 mm.

Ebalia japonica, sp. nov.

Type.—Male, U. S. National Museum No. 65059, off Niigata Light (38° 16′ N., 138° 52′ E.), 70 fathoms, dark green sand, temp. 51° F., July 18, 1906, station 4815, *Albatross.*

Carapace as broad as long on median line, somewhat hexagonal; hepatic region swollen, margin bluntly angled; intestinal region high, conical posterior slope arcuate, twice as long as anterior; a narrow groove separates branchial from intestinal and cardiac regions and intestinal from cardiac; two broad shallow lobes on hind margin; dorsal surface covered with coarse granules which form a crenulate border on lateral margins; five finely granulated tubercles in center of carapace of which three form a triangle on gastric region, the median tubercles behind the lateral; a branchial tubercle near inner angle and almost in line with the median tubercle but a little behind it; front with a small median V, each lobe subtruncate but with a shallow bay, outer angles rounded and produced outward. Ventral surface, also chelipeds and legs granulate. Chelepeds twice as long as carapace; palms longer than fingers, upper margin sinuous. Penult segment of abdomen with backward-pointing spine. Length and breadth of carapace 8 mm.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTION OF A NEW ODONTOPHORUS FROM COSTA RICA.

BY HARRY C. OBERHOLSER.

Some specimens of a Central American partridge, belonging to the genus *Odontophorus*, and now in the collection of Mr. Henry O. Havemeyer, of Mahwah, New Jersey, represent apparently an undescribed species. They were sent by Mr. Havemeyer to the writer for the purposes of examination and identification, and when it became evident that they represented an undescribed form, Mr. Havemeyer courteously suggested that the writer publish a description of this new species. These birds were obtained by the well-known collector, Mr. Austin Smith, of San José, Costa Rica, and we take pleasure in dedicating this beautiful bird to him, in recognition of his services to ornithology. It may, therefore, be called

Odontophorus smithianus, sp. nov.

Specific characters.—Similar to *Odontophorus leucolaemus*, but entire pileum black, not brown; hind neck black mixed with brown; upper parts, including the upper surface of the wings, darker, more sooty; chin and throat black, or with but a very few flecks of white, mostly from exposed feather bases; black of breast more extended, reaching back to the center of the abdomen; all of the remainder of the posterior lower parts darker, more sooty (less rufescent), with lower tail-coverts and under surface of the tail more blackish.

Description.—Type, adult male, No. 5014, collection of Henry O. Havemeyer; San Joaquin de Dota (Pacific water-shed), altitude 4000 feet, March 1, 1931; Austin Smith. Forehead, crown, occiput, sides of head, chin, throat, jugulum, breast, and middle of abdomen, black, the last mentioned somewhat mixed with fuscous, and middle of chin and throat with a few irregular flecks of white, these chiefly spots on the basal or median portions of the feathers showing through the black of the rest of the feathers; upper parts of hind neck black mixed with clove brown; lower hind

neck, sides of neck, and back, between prout's brown and mummy brown, the longitudinal centers of the feathers broadly rather dull buffy brown, imparting a streaked appearance, all the feathers finely vermiculated with blackish, and the middle of the back with a few large, irregular spots of black; rump between cinnamon brown and dresden brown, shading gradually to bay with a tinge of mars brown on the upper tail-coverts, all the feathers finely vermiculated with blackish; tail-feathers fuscous black, finely vermiculated with the brown of the upper tail-coverts, and irregularly and narrowly barred with russet; wing-quills fuscous, the outer edges of the inner primaries slightly mottled with tawny and ochraceous, the outer webs of the secondaries narrowly and irregularly barred with the same and with also a few small, irregular, marginal spots of black, and the tertials terminally on both webs mottled and vermiculated with tawny, russet, and ochraceous, having also a few black spots, and a broad subterminal bar or spot of velvety black, succeeded by a broad apical bar of partly tawny, partly ochraceous tawny; scapulars like the back, with rather large spots or broad bars of velvety black, most of these bordered by a narrow bar of russet, tawny, or ochraceous; superior wing-coverts similar to the sides of the neck, but slightly more rufescent, and more coarsely vermiculated, many of the greater and median series with small apical spots of buffy or ochraceous; middle of abdomen, crissum, and thighs, fuscous black finely barred and vermiculated with russet; sides of body between cinnamon brown and tawny, finely vermiculated with fuscous black; flanks russet, similarly, but more coarsely, vermiculated, and with terminal bars of tawny; lining of wing fuscous, the shorter under wing-coverts somewhat mottled with russet; "bill black; tarsi dark plumbeous; irides dark brown."

Measurements.—Two males: wing, 123.0–127.5 (average, 125.3) mm.; tail, 55.0–55.5 (55.3); exposed culmen, 18; tarsus, 45.5–48.0 (46.8); middle toe without claw, 35.5–37.0 (36.3). *Two females*: wing, 124.5–129.5 (average, 127) mm.; tail, 52.0–59.0 (55.5); exposed culmen, 18–18.8 (18.4); tarsus, 46.5–47.0 (46.8); middle toe without claw, 35.5–38.0 (36.8).

Remarks.—Of this interesting and apparently very distinct new species, four specimens, two males and two females, were collected by Mr. Smith, all from San Joaquin de Dota at altitudes of 4000 or 5000 feet, between February 25 and March 1, 1931, inclusive. They are very uniform in appearance, the chief individual variation consisting of paler lower parts of one female taken on February 25. A female obtained on the same date almost entirely lacks the white on the bases of the feathers of the throat. There seems to be no difference between the sexes except the slightly *larger* size of the female. The colors of the soft parts are identical in all the specimens collected, both male and female.

Although so different in color from *Odontophorus leucolaemus* as to be distinguishable at a glance, it does not materially differ in measurements, as the following averages of specimens of *Odontophorus leucolaemus* show. *Three males:* wing, 124.7; tail, 53.0; exposed culmen, 17.6; tarsus, 44.8; middle toe without claw, 36.2. *Three females:* wing, 125.2; tail, 47.2; exposed culmen, 17.9; tarsus, 45.3; middle toe without claw, 34.3.

This new bird apparently is not referable to any described species, and is one of the most distinct forms of the genus, since only a few species of *Odontophorus* have the head black. Notwithstanding this, it seems to be, of all the species examined in the present connection, most nearly allied to *Odontophorus leucolaemus*.

Mr. Smith reports that he found this species on steep, heavily wooded hill slopes above the settlement at San Joaquin de Dota, from 4000 to 5000 feet. A number of individuals were seen, but as is the case with other Central American members of this genus, they were very elusive, and he was unable to obtain more than four specimens. The birds were noisy early in the morning during March and April.

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PROCEEDINGS
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THE NORTHWESTERN WHITE-TAIL DEER.

BY VERNON BAILEY.

In working out the characters of the white-tail deer in Oregon I find a striking difference between the specimens from the Willamette Valley, west of the Cascades, and those of the Blue Mountain country, where a few still remain. Until specimens were secured a few years ago by Stanley G. Jewett from near Roseburg, Oregon, there was no material available that could be considered typical *leucurus*, described by David Douglas in 1829 from the Williamette River Valley. With these skins and skulls for comparison it becomes evident that the white-tail deer from eastern Oregon, Idaho, and northwestern Montana are quite different from *leucurus* as they are also from the Plains deer, *Odocoileus virginianus macrourus*. As the publication of my report on Oregon mammals may be somewhat delayed the following description of this subspecies is offered in advance of the full report, where more details of distribution will be given. The subspecies may be characterized as follows:

Odocoileus virginianus ochrourus, subsp. nov.

YELLOW-TAIL DEER.

Type.—From Coolin, south end of Priest Lake, Idaho, ♂ adult, No. 159353, Biological Survey collection, U. S. National Museum, collected December 27, 1908, by Frank Lemmer. Miscellaneous catalogue number 7483. A large buck 5 or 6 years old, skull with antlers, and skin in full winter coat.

General characters.—Size about as in *macrourus* of the Great Plains region; colors darker with less black on top of tail; much larger than typical *leucurus* with heavier skull, larger horns, and longer tail, but very similar in coloration. Not so large or dark as *borealis* of the Northeast.

Color.—In winter pelage, upper parts dark buffy gray, becoming bright ochraceous on top of tail, on legs and edges of belly; forehead and top of

head dark brown; brisket dusky; eyelids, nose pad, three spots on top and sides of nose and two on sides of lower lip black; sides of nose and eye-ring light gray; tip and lower surface of tail, belly, throat patch, and lower lip, inside of ears, inside of legs to below heels and knees, metatarsal and foot glands, white. *Summer coat* (June 25 from Coeur d'Alene Mountains): Upperparts bright tawny or light bay; legs but little lighter, not yellowish as in *macrourus;* no real black on top of tail as in *macrourus* and *borealis. Young* light fawn color thickly spotted with white over back and sides.

Skull.—Similar to that of *macrourus* with about the same type of horns, larger, more massive and much heavier than in *leucurus.*

Measurements.—Of type: Total length, 1,752; tail, 265; hind foot, 483; ear, notch to tip, 120; base to tip, 150 millimeters. *Skull* of type: Basal length approximately 275; nasals, 100; orbital width, 120; postorbital width, 105; braincase, 75; mastoid width, 91; alveolar length of upper molar series, 74; of lower molar series, 84 millimeters.

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PROCEEDINGS

OF THE

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THE OREGON ANTELOPE.

BY VERNON BAILEY.

The North American antelope or pronghorn was first described by Ord in 1815 from the "Plains and highlands of the Missouri," probably South or North Dakota. Since then recognizable subspecies have been described from Chihuahua, Mexico, by C. Hart Merriam, and from Lower California by E. W. Nelson, but the group has been left singularly free from nomenclature complications. The animals show only slight and gradual variation over their entire range, and no sharp lines of difference between the described forms can be found.

The specimens from eastern Oregon where antelope were once numerous and are still found in reduced numbers, do not agree with any of the present recognized forms and to avoid the evil of misidentification it seems necessary to give them a subspecific designation that will probably apply to all of those of the Great Basin region.

They may be known by the following characters:

Antilocapra americana oregona, subsp. nov.

Type.—From Hart Mountain (Warner Mountains), Oregon, ♂ adult, No. 205548, Biological Survey collection, in U. S. National Museum, collected September 22, 1914, by Luther J. Goldman. Original number 2040.

General characters.—Size about as in *Antilocapra americana* or slightly larger, with relatively larger feet and longer horns; coloration slightly paler with less black about face and on mane, and less white on crown and shoulder stripes.

Color of body bright cinnamon brown, becoming dark tawny on mane and pale cinnamon on legs and ears; muzzle, eyelashes, spots over anterior corners of eyes, edges of ear tips, and in males a spot at angle of each jaw, black or blackish; forehead dark grayish cinnamon; crown and nape dull

gray or dark cinnamon without conspicuous white markings. Much white on throat, cheeks, ears, lips, sides, belly, and rump.

Skull.—Similar to that of *americana*, with slightly larger, more rounded audital bullae and longer horns; horns in type specimen very long, slender, and wide spreading, but in another buck from the type locality not so long. In a large old male in the Carnegie Museum, collected on Hart Mountain by O. F. Fuehre, the horns are very long and broad with moderately heavy basal and lateral knobs or tubercles, less extremely developed than in *peninsulae* from Lower California, but much more so than in typical *americana or mexicana*.

Measurements.—Of type specimen, ♂ adult, total length, 1,493; tail, 107; hind foot, 431; ear, dry, 140 millimeters. Of female topotype: 1,486; 101; 443; ear, dry, 135 millimeters. *Skull of type:* Basal length, 242; nasals, 95; alveolar length of molar series, 73; orbital width, 145; mastoid width, 87; length of horns over curve, 360 and 373; of horn cores from orbits, 142 and 145 millimeters.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

BUFFALO OF THE MALHEUR VALLEY, OREGON.

BY VERNON BAILEY.

No living buffalo have been recorded in the State of Oregon by white men, but there is ample evidence that they once occupied the Malheur, Owyhee and Warner Valleys in Oregon, and the open valley and plains country of northeastern California and northwestern Nevada. The Indians have fairly definite records of hunting them in these valleys up to a little more than a hundred years ago, and scattered remains of their bones and skeletons have been found in many places over eastern Oregon. Only during the last two years, however, have any specimens in condition for study come into collections so they could be compared with similar material from other parts of North America.

Now there are about twenty skulls and two almost complete skeletons in the Biological Survey collection in the National Museum, all from the dry bed of Malheur Lake, where they were found literally by hundreds when in 1930 the water dried up so that automobiles could be driven over much of the old lake bed. The skulls were easily sighted at a distance, as they were large and white and lay on top of the firm black mud, and many were in almost perfect condition for specimens. In most cases where a skull was lying on top, the complete skeleton could be found under ground, but much patient work was necessary to recover all the bones of these skeletons. Only a few have been salvaged although many of the skulls have been taken away for private collections and for public museums.

Thanks to the efforts of Mr. George M. Benson, Refuge Keeper of the Malheur Wild Life Refuge, there are now two almost complete skeletons with good skulls of large old bulls

in the Biological Survey collection, and these with many skulls picked up and contributed by others afford a fine series for comparison and study.

In comparison of these skulls with others from southern Texas that may be considered typical *Bison bison bison*, many slight differences are noted, while with the huge northern *Bison bison athabascae*, there are even greater differences. With *Bison occidentalis*, its nearest fossil relative, there is no close connection. In the present-day system of classification it seems necessary to give a subspecific name to this western form of buffalo, although it is now extinct and only skeletal characters can be used in its diagnosis. It may be known by the following designation:

Bison bison oregonus, subsp. nov.

OREGON BISON OR BUFFALO.

Type.—Adult male, skull and skeleton, U. S. National Museum, Biological Survey collection, No. 250145, from the dry bed of Malheur Lake, Oregon. Collected November, 1931, by George M. Benson. Original number 26728 in X catalogue.

Similar in general characters to *Bison bison bison* of southwestern Texas, but slightly larger, with relatively longer and straighter and less abruptly tapering horn cores, indicating wider and straighter horns of a somewhat larger animal. The rostrum or arch formed by the upper premaxillary bones is slightly longer and relatively narrower than in southern specimens; interpterygoid fossa wider and larger; auditory inflations smaller than in typical Texas skulls; molars larger. In the type skull two supernumerary premolars occur inside of the regular series but they are of no taxonomic significance. No external characters are or can ever be known as the form is long extinct. The cranial characters distinguishing it incline somewhat toward those of the much larger *athabascae* but are no nearer to it on the one hand than to southern Texas specimens on the other.

Measurements.—Type skull, old bull, probably nine or ten years old: Basal length, 485; nasals, 204; alveolar length of upper molar series, 148; greatest orbital width, 340; postorbital, 275; mastoid width, 270; spread of horn cores, 655; upper curve of horn cores, 230; lower curve, 285 millimeters. Skull of adult cow from same place: Basal length, 458; nasals, 195; alveolar length of upper molar series, 140; greatest orbital width, 270; postorbital width, 220; mastoid width, 215; spread of horn cores, 495; upper curve of horn cores, 160; lower curve, 180 and 190 millimeters.

The known range of this western form has been given by Dr. C. Hart Merriam in the Journal of Mammalogy, vol. 7, no. 3, p. 211, 1926; and by Vernon Bailey, in vol. 4, p. 254, 1923.

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PROCEEDINGS

OF THE

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FIVE NEW SOUTH AMERICAN SPECIES OF MASCAGNIA.[1]

BY C. V. MORTON.

The following new species were noted while identifying recent South American collections of Malpighiaceae. The genus is not a large one, thirty-nine species being recognized by Niedenzu in his recent valuable monograph of the family. Most of these are represented in the U. S. National Herbarium. The identification of the recent collections made by Killip and Smith, Pennell, Pittier, Klug, and others was not therefore especially difficult. Specfic lines seem to be exceptionally sharp, in contrast to *Hiraea* and several other genera of the family.

Mascagnia loretensis Morton, sp. nov.

Sect. *Eumascagnia*, Subsect. *Psilopetalis*, Ser. *Zygandra*. Liana ramulis gracilibus ca. 2 mm. diametro, glabris rubescentibus laevibus, lenticellis nullis, internodiis 3–4.5 cm. longis; lamina foliorum ovata (maximae 9 cm. longae et 4.5 cm. latae), basi rotundata complicata, apice sensim acuminata, membranacea, pallido-viridis, utrinque concolor, margine integra plana nec incrassata, glabra nitida, nervis primariis 5 vel 6 utrinque prominulis arcuatis infra marginem confluentibus, nervis secundariis tertiariisque utrinque prominulis reticulatis; petiolus maximus 9 mm. longus, 1 mm. diametro, teres pubescens supra leviter canaliculatus eglanduliferus; stipulae lanceolatae 2 mm. longae, basi ca. 0.6 mm. latae, crassae, margine perspicue cartilagineo-incrassatae, persistentes; racemi 10, usque 12-flori, ca. 3 cm. longi in paniculam terminalem foliiferam 6 cm. longam dispositi, foliis paniculam versus gradatim reductis, foliis floriferis lanceolatis parce utrinque pubescentibus petiolatis stipulatis eglanduliferis, pedunculo paniculae nullo, pedunculis racemorum usque 13 mm. longis, 0.6 mm. latis, dense strigosis, pedunculis floriferis usque 2 mm. longis apice valde incrassatis pubescentibus medium versus bracteolatis, pedicellis ca. 12 mm. longis gracilibus parce pubescentibus apice leviter incrassatis, bracteis bracteolisque parvis ovatis obtusis pubescentibus; flores ca. 12 mm. diametro; sepala ovalia ca. 3 mm. longa, apice rotundata obtusa pubescentia 8 glandulas oblongas gerentia; petala flava (sec. Klug) glabra, limbo suborbiculari ca. 4 mm. longo, cavo, dorso ala ca. 0.2 mm. lata carinato, ungue 1–1.5 mm. longo; filamenta brevia, ca. 1.1 mm. longa,

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

glabra basi dilatata, antheris ovalibus, ca. 1 mm. longis, glabris; styli aequali paullo divergentes, vix 2 mm. longi, anticus apice truncatus, 2 postici perspicue uncinati; ovarium hirsutum; samarae nitidae glabratae; nux ovoidea, ca. 5 mm. longa, areola ventrali lineari-lanceolata, 5 mm. longa, 1 mm. lata; ala lateralis basi continua apice usque ad nucem incisa, apicem versus in 2 lobos lanceolatos vel ovales incisa, 15 mm. lata et alta, margine irregulari; ala dorsalis semiovata, ca. 13 mm. longa, 5 mm. lata, basi cum ala laterali connata, apice acuta nucem multo superans, alis intermediis nullis.

Type in the U. S. National Herbarium, no. 1,455,893, collected in forest at Mishuyacu, near Iquitos, Dept. Loreto, Peru, alt. 100 meters, Febr.–March, 1930, by G. Klug (no. 907).

The closest relatives of the present species are probably *Mascagnia violacea* (Tr. & Planch.) Ndzu. and *Mascagnia nervosa* Ndzu. The following tabulation will show the distinguishing characters of the three species:

Corolla violet; petals scarcely carinate; lateral samara wings distinct at base and apex; leaves up to 10 cm. long, revolute-margined; stipules subulate, small (scarcely 1 mm. long); panicles axillary, large (7.5–12.5 cm. long); floral peduncles 3 mm. long; pedicels 6–7 mm. long; bracts and bracteoles linear-subulate ..... *M. violacea.*

Corolla rose; petals carinate; lateral samara wings continuous at base and apex; leaves large (up to 15 cm. long), thick, veiny, revolute margined, biglandular at base; stipules setaceous, 1–1.5 mm. long; panicles axillary, large (over 10 cm. long); floral peduncles 2.4 mm. long; pedicels 8–11 mm. long; bracts linear-subulate; nut subglobose; areole broadly ovate. ..... *M. nervosa.*

Corolla yellow; petals carinate; lateral samara wings continuous at base, distinct at apex, both incised into lanceolate or oval lobes toward the apex; leaves up to 9 cm. long, membranous, the margin not revolute; stipules lanceolate, 2 mm. long; panicles terminal, 6 cm. long; floral peduncles up to 2 mm. long; pedicels about 12 mm. long; bracts and bracteoles ovate; nut ovoid; areole linear-lanceolate ..... *M. loretensis.*

Mascagnia pittieri Morton, sp. nov.

Sect. *Eumascagnia*, Subsect. *Sericopetalis*. Rami ca. 2.5 mm. diametro, leviter striati flavescentes sparse et persistente pubescentes lenticellis nullis; lamina foliorum ovata, 9–10.5 cm. longa, 6–6.5 cm. lata, basi obtusa rotundata paullo obliqua, glandulis 2 flavidis parvis instructa, apice breviter et oblique acuminata (vix ultra 6 mm.), margine integra revoluta haud incrassata, supra olivaceo-viridis, nec nitida, glabrata (pilis paucis persistentibus), subtus pallidior flavido-viridis fere omnino glabra, membranacea, nervis medialibus primariisque (his 4 utrinque) supra impressis, subtus elevatis prominentibus flavis fere glabris, secundariis supra inconspicuis, subtus distantibus reticulatis vix prominulis; petiolus teres supra canaliculatus, ca. 1 mm. diametro, 10–15 mm. longus, sparse pubescens recurvatus, glandulis nullis; stipulae persistentes triangulares acuminatae, 1.5 mm. longae, basi 1 mm. latae, pubescentes; paniculae axillares, 5 cm. vel minus longae ex 3 racemis constatae, racemis terminalibus ca. 15-floris, 2 lateralibus ca. 7–floris, pedunculis panicularum ca. 2 cm. longis, ca. 1 mm. diametro, dense pubescentibus, apice 2 foliolis foliis caulinis similibus sed multo minoribus, ca. 7 mm. longis, 5 mm. latis, basi 2 glandulas magnas gerentibus nervis lateralibus haud prominulis, pedunculis racemorum 6–8 mm. longis, dense pubescentibus, pedunculis floriferis ca. 3 mm. longis, basi bracteis triangularibus ca. 1 mm. longis carinatis apice obtusiusculis pubescentibus, medio bracteolis vix 1 mm. longis obtusis

pubescentibus instructis, apice incrassatis abrupte dilatatis, pedicellis ca. 7 mm. longis, fere glabris gracilibus apice paullo incrassatis; sepala connata, glandulas 10 ovales 3 mm. longas sepala fere aequantes gerentia; petala ca. 6 mm. longa fere glabra nec sericea, limbo late ovato cavo denticulato, ungue 1 mm. longo; stamina inaequalia, filimentis basi dilatatis glabris, antheris ovalibus glaberrimis; stylus anticus 2 posticis paullulum brevior, 2.5 mm. longus, omnes recti, apice dilatati truncati vix uncinati, glabri; ovarium lobatum pubescens; nux ovata 6 mm. longa glabra, areola ventrali lanceolata 4 mm. longa, 1 mm. basi lata; ala lateralis continua orbicularis, 20–24 mm. diametro, apice usque 4 mm. incisa, sinu obtuso lato, venosa glabra membranacea; crista dorsalis semicordata, ca. 1 cm. longa, 4 mm. lata sinum non attingens; alis vel rugis intermediis nullis.

Type in the U. S. National Herbarium no. 531090, collected in the hills of Miraflores, above Palmira, Central Cordillera, State of Cauca, Colombia, alt. 1,200–1,600 meters, January, 1906, by H. Pittier (no. 900).

Apparently the present new species is nearest to *Mascagnia spruceana* Ndzu., described from the Río Negro between Barcellos and San Gabriel, Brazil (*Spruce* 2070). I have not seen a specimen of this species, which appears to differ in having larger bracts and bracteoles (4–5 mm. and 3–4 mm. respectively), these both acute and petiolate at base. The present species has triangular broad-based bracts and bracteoles, 1 mm. long or less. The petal limb of *M. spruceana* is described by Niedenzu as subplane, while that of *M. pittieri* is distinctly concave. The samaras of the two species are evidently quite different. Those of *M. spruceana* are puberulous and very large, the wings 4.5 cm. in diameter, the dorsal crest 2 cm. high, the areole suborbicular and 3 mm. long. Our species has glabrous, smaller samaras, the wings 20–24 mm. in diameter, the dorsal crest 1 cm. high, and the areole lanceolate (4 mm. long, 1 mm. wide at base).

Mascagnia ovatifolia (Kunth) Griseb. may be distinguished from *M. pittieri* as follows:

Leaf margin revolute; racemes 7–15-flowered in small panicles less than 5 cm. long; claw of petals 1 mm. long; anthers glabrous; samaras glabrous ..... *M. pittieri.*

Leaf margin not revolute; racemes up to 40-flowered, up to 10 cm. long, in very large panicles; claw of petals 3 mm. long; anthers pilose; samaras pilose ..... *M. ovatifolia.*

Mascagnia nobilis Morton, sp. nov.

Subg. *Mesogynixa*, Sect. *Pleuropterys*. Liana ramis tortilibus striatis, 4.5 mm. diametro, dense flavido-sericeis (sub indumento nigris), internodiis valde elongatis, ca. 15 cm. longis; lamina foliorum late ovalis, 10–13 cm. longa, 8–9 cm. lata, basi rotundata parum obliqua, apice brevissime apiculata (apiculo vix 4 mm. longo), membranacea, supra glabra (costa excepta) atro-olivacea nitida, subtus glandulis paucis adspersa pallide olivaceo-brunnea densissime pubescens, pilis gracillimis stipitatis medio semel furcatis (stipitibus rectis ramis late patentibus), margine vix revoluta eglandulifera, nervis medialibus primariisque (his 5–6 utrinque) supra immersis obscuris, subtus pallidis elevatis valde prominentibus, nervis secundariis distantibus inter se plus minusve parallelis utrinque vix prominulis; petiolus striatus 17–25 mm. longus, ca. 2 mm. diametro, dense sericeus supra canaliculatus; stipulae crassae persistentes, vix 0.5 mm. longae, petioli basi utrinque affixae; paniculae axillares, fructu 21.5 cm. longae, pedunculo 7 cm. longo densissime sericeo (sub indumento nigro),

foliolis foliis caulinis similibus sed minoribus, 3 cm. longis, 2 cm. latis; flores non suppetunt; racemi ca. 12 in paniculam dispositi, ca. 10-flori, pedunculo racemi infimi 21 mm. longo, pedunculis superioribus gradatim brevioribus, pedunculis floriferis 3.5–4 mm. longis basi bracteatis, 2 bracteolas ca. 1.5 mm. infra apicem gerentibus, bracteis bracteolisque ca. 2 mm. longis lanceolato-deltoideis acutis eglanduliferis dense sericeis, pedicellis ca. 4.5 mm. longis; sepala glandulis ovalibus instructa, apice recurvata; samarae pallido-virides (sec. Killip & Smith) siccitate brunneae dense sericeae, areola ventrali ovata ca. 4 mm. longa, nuce subglobosa ca. 6 mm. longa; alae laterales membranaceae venosae ovales ca. 25 mm. latae, 40–45 mm. longae, marginibus exterioribus subintegris haud erosis lacerisve; ala dorsalis semiorbicularis 4 mm. lata nucem multo superans, rugis accessoriis nullis.

Type in the U. S. National Herbarium, no. 1,461,295, collected at Yurimaguas, lower Río Huallaga, Dept. Loreto, Peru, in woods, alt. about 135 meters, August 22–September 9, 1929, by E. P. Killip and A. C. Smith (no. 27557).

Mascagnia nobilis is related to *M. sericans* Ndzu. and *M. stannea* (Griseb.) Ndzu. The former is an erect shrub about 2 meters high, with glabrate branches and short internodes. *M. nobilis* is, on the contrary, a high-climbing vine with densely yellow-sericeous branches and elongate internodes. The leaves also of *M. sericans* are quite different from those of *M. nobilis*, being coriaceous and densely sericeous (with the secondary veins prominently reticulate above and not at all parallel), rather than membranous, glabrous above, and spreading pubescent beneath (the secondary veins immersed above and more or less parallel). Moreover, *M. sericans* has no stipules and bears very different, coriaceous, much smaller samaras.

M. stannea Ndzu., a species from the distant Mt. Aguacate in Nicaragua, is more closely related. It differs, however, in its glabrate branches and shorter internodes and in the shining metallic pubescence of the under side of the leaves. The panicle is terminal (rather than axillary, as in *M. nobilis*) and three times compound, and is composed of corymbs rather than of racemes. Moreover, the peduncles are bibracteolate at apex, rather than appreciably below the apex.

Mascagnia hondensis Morton, sp. nov.

Subg. *Mesogynixa*, Sect. *Pleuropterys*. Rami teretes glabrati pallido-fuscescentes, lenticellis minutis instructi, ca. 3 mm. diametro; lamina foliorum ovata basi obtusa rotundata apice breviter acuminata (ca. 1 cm.), maximae 9 cm. longae et 5.5 cm. latae, margine paullo revoluta cartilagineo-incrassata glandulas abortivas gerens, adulta coriacea glabrata concolor siccitate olivacea, supra lucida, costa utrinque prominente, nervis primariis utrinque 5 vel 6, secundariis perspicue reticulatis supra paullo subtus valde prominentibus; petiolus glabratus crassiusculus, ca. 10 mm. longus, 1.5 mm. diametro, supra canaliculatis glandulas nonnullas parvas gerens; stipulae parvae, triangulares, petioli basi utrinque affixae; corymbi pauciflori ad folia axillaria superiora et in paniculam terminalem dispositi, pedunculis floriferis brevissimis, 1–1.5 mm. longis, apice bibracteolatis, pedicellis (fructu) ca. 14 mm. longis, ca. 0.5 diametro, apice incrassatis, bracteis bracteolisque parvis ovatis apice obtusis rotundatis persistentibus; sepala ovata apice obtusa 8 glandulas ovales gerentia; flores non suppetunt; samarae papilioniformes fuscescentes dense sericeae; nux ovoidea ca. 6 mm.

longa, 5 mm. lata, densissime aureo-sericea, areola ventrali ovali, ca. 5 mm. longa, 3 mm. lata, leviter convexa; alae laterales transverse obdeltoideae, maximae 24 mm. longae et 25 mm. latae, marginibus exterioribus perspicue et irregulariter laceris; crista dorsalis basi attenuata apice usque 1 mm. lata, nucem longe superans, alis vel tuberculis intermediis nullis; torus pyramidalis trialatus ca. 5 mm. longus.

Type in the U. S. National Herbarium, no. 1,059,701, collected at Honda, Dept. Tolima, Colombia, alt. about 220 meters, August, 1919, by Brother Ariste Joseph (no. A371).

The present species is apparently a very distinct one in the section *Pleuropterys*, but in the absence of flowers its relationship can not be definitely stated. It is perhaps most nearly allied to *Mascagnia lehmanniana* Ndzu., described from the distant savannah region near Orocué along the Meta River, Colombia. That species (of which the samaras are unknown) apparently differs in its elongate, many-flowered racemes, in its longer floral peduncles (4–5 mm.), and especially in its much larger, very acute, lanceolate-linear bracts and bracteoles. *M. hondensis*, on the contrary, has the flowers in few-flowered corymbs (these axillary or aggregate in a terminal panicle), short floral peduncles (1–1.5 mm.), and small, obtuse, ovate bracts and bracteoles.

Mascagnia dumetorum Morton, sp. nov.

Subg. *Mesogynixa*, Sect. *Pleuropterys*. Liana ramis annotinis gracilibus rubescentibus glabris, 2 mm. diametro, lenticellis numerosis minutis praeditis, ramis hornotinis dense pubescentibus, pilis albidis patentibus; lamina foliorum ovata, maximae ca. 8.5 cm. longae et 4.5 cm. latae, basi complicata rotundata apice acriter et sensim acuminata, margine plana basi biglandulosa, chartacea, supra pallido-viridis dense puberula demum glabrata nitidaque, subtus fuscescens adulta dense et breve pilosa, nervis primariis utrinque ca. 5 supra prominulis, subtus prominentibus, secundariis reticulatis solum subtus prominulis; petiolus ca. 1 cm. longus, juventute dense puberulus demum glabratus, eglanduliferus; stipulae minutae ca. 1 mm. longae, lineares subulatae nigrae; racemi ramulos breves axillares folioliferos 17–20 mm. longos, ca. 1.2 mm. diametro, dense breve albido-pilosos terminantes, foliolis foliis similibus sed multo minoribus, 13–27 mm. longis, 9–18 mm. latis, stipulis eis foliorum similibus; racemi ca. 5 cm. longi, ca. 15-flori, simplices, pedunculis 15–18 mm. longis, pedunculis floriferis 6–7 mm. longis, 2 bracteolis instructis, pedicellis 4.5–5 mm. longis apice parum incrassatis, sicut pedunculis dense albido-pilosis sericeis, bracteis bracteolisque lineari-subulatis, illis ca. 5 mm. longis, his ca. 3.5 mm. longis, dense albido-pilosis; flores ca. 2 cm. diametro; sepala ovata ca. 4.5 mm. longa, dense sericea apice obtusiuscula recurvata, 8 glandulas oblongas ca. 3 mm. longas gerentia; petala lutea (sec. Pennell), patentia, fere glabra, pilis perpaucis subtus instructis, limbo suborbiculari (quinti ovali) plano, margine integro paullulum undulato, 6 mm. longo, 7 mm. lato, ungue ca. 3 mm. longo; androeceum actinomorphum staminibus fertilibus 10, filamentis rectis ca. 3.5 mm. longis, filamentis oppositipetalis paullo brevioribus, basi dilatatis, glabris, antheris ovalibus aequalibus, ca. 1 mm. longis, glabris; styli aequales a basi paullo divergentes, 2.5 mm. longi, anticus tortilis, 2 postici subrecti, dorso apicis acuti interne gynixiferi, glabri; ovarium dense pubescens; nux samarae subovoidea, ca. 5 mm. longa, dense pubescens, areola ventrali ovata, 3 mm. longa, 2 mm. lata; alae laterales papilioniformes transverse obdeltoideae, 20 mm. altae (basi 7 mm. altae), 15 mm. latae, margine exteriore leviter undulata, chartaceae, venosae, parce pubescentes; ala dorsalis lineari-oblonga 11 mm. alta, ca.

3 mm. lata, pubescens, alis vel rugis longitrorsis intermediis nullis, rugis transversis numerosis prominentibus.

Type in the U. S. National Herbarium, no. 1,042,974, collected in thickets at Sincé, Dept. Bolívar, Colombia, alt. 120–170 meters, January 25, 1918, by F. W. Pennell (no. 4033).

The present plant is allied to *Mascagnia pubiflora* (Juss.) Griseb., a species known only from two collections in Brazil and differing in numerous characters, which may be summarized as follows:

Leaves bullate, glaucous-incanous beneath, with marginal glands; primary nerves 6–8; petioles 3–5 mm. long; stipules triangular, caducous, 0.5 mm. long; racemes up to 40–flowered and 20 cm. long; bracts and bracteoles petiolate, ovate to lanceolate (the former glanduliferous); peduncles 8–12 mm. long; pedicels equal to or longer than peduncles; petals densely sericeous, the limb oval, 10–12 mm. long; filaments and anthers puberulous; samaras with linear-lanceolate ventral areole ..... *M. pubiflora.*

Leaves not bullate, fuscescent beneath, without marginal glands; primary nerves about 5; petioles about 10 mm. long; stipules linear-subulate, persistent, about 1 mm. long; racemes up to 15-flowered and 5 cm. long; bracts and bracteoles linear-subulate, not petiolate, not glanduliferous; peduncle 6–7 mm. long; pedicels 4.5–5 mm. long; petals almost glabrous, the limb suborbicular, 6 mm. long; filaments and anthers glabrous; samaras with ovate ventral areole ..... *M. dumetorum.*

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PROCEEDINGS

OF THE

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THREE NEW SUBSPECIES OF FLORIDIAN LIGUUS.

BY HENRY G. FRAMPTON.

Investigations during 1931 in localities in south Florida never explored before by a malacological research worker and examination of new material from older stations have revealed the presence of at least three new subspecies of the genus Liguus.

A new station in the Pinecrest area of the South Central Everglades has yielded a good series of specimens of a race that heretofore has been collected only rarely. The East Coast mainland ridge has provided a distinctly different race, never reported prior to 1931, while a sufficient series of the third form to entitle it to recognition as a valid entity has been collected on Lower Matecumbe key.

Liguus fasciatus fuscoflammellus, subsp. nov.

Description.—Shell solid, elongate and lustrous, with flattened to slightly rounded whorls. Sutures moderately well impressed. Palatal lip unthickened. Parietal wall smooth and bearing merest trace of callosity. Columella slightly twisted and moderately truncate. Color, axial region white, with non-pigmented area of nuclear whorls extending through third whorl. The color pattern consists of flame-like, golden brown axial striations wavering across a rich yellow ground color, giving the effect of alternating brown and yellow flames that extend uninterruptedly from suture to suture on the fourth, fifth and sixth whorls and flash in unbroken order across the body whorl to coalesce in a rufous mass in the region bordering the columella. The brown flames range in color from a dark mahogany to a tone but slightly deeper than the yellow ground color. A well-defined peripheral line of dark purple is present. The brown flames in some specimens assume an occasional bluish hue. There are seven whorls. Sculpture of fine growth lines.

Length	*Width*	*Ap. length*	*Ap. width*	
39.2 mm.	22 mm.	16.8 mm.	10 mm.	*Holotype*
41.4 mm.	23.3 mm.	17 mm.	10.2 mm.	*Paratype*
44 mm.	24.1 mm.	18.7 mm.	11.1 mm.	*Paratype*

Holotype in private collection of author, Timm's Hammock, Florida East Coast mainland ridge. Collected by author in August, 1931. Paratypes in private collections of Richard F. Deckert, Miami, and Albert Pflueger, Miami, from Timm's and Cox Hammocks respectively, collected by Mr. Pflueger in August, 1931.

Remarks.—This subspecies is one of the best-defined Florida forms and also is one of the rarest, but may be expected to occur in various localities on the Florida East Coast mainland ridge. It has been reported from two localities only, Cox and Timm's Hammocks. It may be considered one of the latest forms to evolve in south Florida. Although specimens of Liguus have been collected from Cox and Timm's Hammocks for many years, the first specimen of *fuscoflammellus* was not reported until August, 1931, when Albert Pflueger found one in Cox Hammock. The same month I found one in Timm's and later Mr. Pflueger collected one in the same locality. Since then, two other specimens have been taken in Timm's Hammock.

A similar form has been collected, but it differs in that the axial region is pink and flame-like markings are less sweeping in their character. When first found, the shell was regarded as an unusual sport or hybrid, but the occurrence of an identical form in two well-separated localities and the discovery of several individuals that vary little mark the form as a distinct race.

It is significant that Timm's Hammock is the type locality of *Liguus fasciatus alternatus* Simpson, a subspecies characterized by alternating brown and yellow markings. *Alternatus*, however, is a banded type of shell and in no way similar to *fuscoflammellus* except in the color sequence. Cox Hammock, however, never has yielded a specimen of *alternatus*.

Liguus fasciatus clenchi, subsp. nov.

Description.—Shell is medium-sized, sub-solid to barely solid, polished. It is regular in shape, tending to globosity in some specimens. There are seven whorls, moderately convex customarily and strongly convex in globose forms. First nuclear whorl pink, and very faintly so in some specimens; second, third and sometimes fourth whorls white, but usually brownish flecks on fourth whorl. Sutures well impressed. Columella generally whitish, but usually pink at base, moderately truncate and slightly twisted. Palatal lip emarginate in solid forms and smooth in sub-solid ones. Parietal wall thinly calloused.

Color pattern.—Ground color of rich yellow to faded canary yellow; reddish brown striations on fifth whorl, broadening into blotches and splashes of watery blue, brown and dull red on sixth and body whorls; distinct, very dark brown sub-sutural band averaging 2 mm. in width and narrower, usually broken supra-sutural band. Blending of reddish, bluish and brownish wash gives shell decided rufous cast. Break in general color pattern forms a more or less distinct peripheral zone of ground color in typical specimens. Basal area washed by intensified admixture of blue, red and brown hues, with broken band of same tones on region bordering

columella. Faint spiral green lines present on most specimens. Sutures always whitish or yellow. A lighter form of this race, usually a globose shell, is marked only by the brown sub-sutural zone and á broken supra-sutural one, sometimes appearing as mere flecks. The body whorl in this form is marked only by a faded yellowish ground color with an occasional faint reddish brown wash. A ragged-edged reddish brown band invariably is present on the region bordering the columella. A darker form of *clenchi* is similar to *Liguus fasciatus barbouri* Clench, but usually has outstanding green cuticular lines and is always differentiated by the pink apex. This form usually has a deep red peripheral band and blackish basal area.

Length	*Width*	*Ap. Length*	*Ap. width*
45.8 mm.	27.4 mm.	20.8 mm.	13 mm. *Holotype*

Holotype in private collection of author, from Pinecrest region, central Everglades, Florida, Hammock No. 46 (M. C. Z. number), collected by author in November, 1931. *Paratypes*, in Museum of Comparative Zoology from Pinecrest Hammock No. 46, collected by author, and in private collection of Richard F. Deckert, Miami, from same locality, collected by Mr. Deckert.

Remarks.—Single specimens of this form have been found rarely in various hammocks of the Pinecrest region for some time, but no distinct group was discovered until late in 1931, when R. F. Deckert and the author found a quantity in a hammock located in the northeastern part of the Pinecrest region.

The race previously had been loosely classified as *Liguus fasciatus testudineus* Pilsbry by collectors who possessed it, although the form in no way remotely resembles typical forms of *testudineus*. In a general way, many of the specimens resemble *L. fasciatus farnumi* Clench, *L. fasciatus barbouri* Clench, and *L. fasciatus floridanus* Clench, but always may be distinguished by the pinkish apex. The race is a distinct Pinecrest form and it is unlikely it will be found to occur elsewhere in south Florida.

Liguus solidus splendidus, subsp. nov.

Description.—Shell medium to large, very highly polished, elongate, with rather flattened whorls, although some specimens have moderately convex body whorls. Entire axial region white. Ground color creamy yellow to lustrous yellowish brown, with dark brown and bluish axial smears on body whorl. Dark brown smears, flecks and flames extending from suture to suture on third, fourth, fifth and sixth whorls, but appearing mostly as richly-hued flames on fifth whorl. Squarish and blotchy brown spots on sutures of sixth and body whorls, with sub-sutural spots generally square and spaced regularly, but supra-sutural spots irregular and smeared. Brownish markings occasionally fade into a slaty blue. Distinct reddish brown peripheral line, with rufous smear on basal area. Broken band on area adjoining columella. Palatal lip smooth and unthickened within,

columella thin and straight or slanting. Parietal wall uncalloused. Spiral green lines usually present, particularly on basal area.

Length	*Width*	*Ap. length*	*Ap. width*	
50 mm.	27 mm.	21 mm.	12.5 mm.	*Holotype*

Holotype in private collection of author, from middle hammock of Lower Matecumbe key, Florida, collected by author in summer of 1931. *Paratypes* in Museum of Comparative Zoology and in private collections of R. F. Deckert and Dr. M. P. DeBoe, Miami, all collected in middle hammock of Lower Matecumbe key.

Remarks.—Charles Torrey Simpson (1920, Proc. Biol. Soc. Washington, vol. 33, p. 122), describes a dark form of *Liguus solidus pseudopictus* Simpson with "broad, brown zigzag stripes." Due to the fact that *splendidus* is one of the rarest of all Floridian *Liguus* forms, only a few specimens were available for study a decade ago. Collectors have ascribed it to *pseudopictus*, but differentiated it to the extent of calling it "dark *pseudopictus*." In view of material now at hand for study, it is apparent that *splendidus* is a distinct race, with no *true* intermediate forms between it and *pseudopictus*. The latter frequently is very richly colored, but the axial striations on the upper whorls always have a bluish cast, while those of *splendidus* always are dark brown. The ground color of typical specimens is a much richer brown than occurs on even the darkest *pseudopictus*. The new subspecies, like *pseudopictus*, is found only in the middle hammock of Lower Matecumbe key, and occurs, in a broad ratio, of about 1 to 50 with *pseudopictus*.

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PROCEEDINGS
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A NEW BABBLER FROM NORTHERN SIAM.

BY J. H. RILEY.[1]

Dr. Hugh M. Smith, the past year, visited Doi Nangka, a mountain in northern Siam about 5000 feet high, and made quite an extensive collection of birds. While the collection contains many birds not previously recorded from Siam, the only apparently undescribed species is the following small short-tailed, long-legged babbler; a ground inhabiting bird occurring at no great altitude. It may be known as:

Heteroxenicus nangka, sp. nov.

Type, adult male, U. S. National Museum, No. 330,582, Pang Meton northern Siam, April 29, 1931. Collected by Hugh M. Smith (original No. 4722).

Above snuff brown, with a cinnamon brown wash on the head, back and rump; cheeks and side of neck much lighter than the back; a supra-loral white streak extending back to about the middle of the orbit; below white, the feathers of the throat lightly edged with tawny-olive; the feathers of the chest more broadly tipped with the same, forming a band, but with the white sub-basal band on the feathers showing through; abdomen white; under-tail coverts warm buff; flanks washed with tawny-olive; wing-coverts externally the color of the back; flight feathers fuscous black, lighter towards the tips and edged on the outer web with cinnamon brown; under wing-coverts tawny-olive with dusky mottling; upper tail-coverts and tail cinnamon brown; thighs olive brown. Wing, 59; tail, 33; culmen, 13; tarsus, 28; middle-toe, 15 mm.

The female has the pectoral band wider with little or no white showing through; the white of the abdomen more restricted; and the white supra-loral streak obscured by buffy.

Remarks.—Doctor Smith sent three males and one female from the type locality and one female from Doi Nangka. The type locality is situated in the heart of the mountain.

This species differs from *H. leucophris* of Java in being lighter, less rusty above.

[1]Published with the permission of the Secretary of the Smithsonian Institution.

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PROCEEDINGS

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NEW FROGS OF THE GENERA ARTHROLEPTIS AND HYPEROLIUS FROM TANGANYIKA TERRITORY.

BY ARTHUR LOVERIDGE.

In reexamining some East African frogs of the genus *Arthroleptis*, collected in the Uluguru and Usambara Mountains in 1926, and referred to *stenodactylus* Pfeffer (Barbour and Loveridge, 1928, Mem. Mus. Comp. Zool., *50*, p. 207) as a result of comparison with other specimens (M. C. Z. 9513–4) which had been similarly confused (Procter, 1920, Proc. Zool. Soc. London, p. 414), I find that the frogs inhabiting the rain forest are distinguishable from those of the dry bush and coastal plain representing typical *stenodactylus*. In addition to the Dar es Salaam specimens listed in the 1928 paper cited above, the Museum of Comparative Zoology has now a representative series of true *stenodactylus* secured during 1929 and 1930.

It seemed possible that the name *lönnbergi*, proposed by Nieden for a frog from Mombo, might be available for the rain-forest form, as a belt of rain forest survives along the river at Mombo, which lies at the foot of the western Usambara Mountains. However, on submitting a Nyingwa frog to Dr. Ernst Ahl for favour of comparison with the type of *lönnbergi*, he assures me that I was correct in 1928 in assigning *lönnbergi* to the synonymy of *stenodactylus* for he considers them specifically identical and has even detected the lingual papilla overlooked by Nieden. Dr. Ahl also considers that *methneri* Ahl is distinct from the Nyingwa frog so that it appears the latter requires a new name, for which I propose

Arthroleptis stenodactylus uluguruensis, subsp. nov.

Type.—Museum of Comparative Zoology, No. 16,100. An adult ♀ from between 7,000 and 8,000 feet at Nyingwa, Uluguru Mountains, Tanganyika Territory, collected by Arthur Loveridge, October 18, 1926.

Paratypes.—

3 (M. C. Z. 9510, 9513–4) Morogoro, base of Uluguru Mtns., 25.xii.17.
1 (M. C. Z. 9511) Uluguru Mtns., just above Morogoro. 19.x.18.
4 (M. C. Z. 10395–6–8–9) Rain forest on Uliea-Madazini Rd., 2.iii.23.
7 (M. C. Z. 10401, 13111–5) Bagilo, Uluguru Mtns., 4. v. 22 and ix.26.
13 (M. C. Z. 13116–20) Nyange, " x.26.
1 (M. C. Z. 13121) Mkangazi, " 12.x.26.
13 (M. C. Z. 13122–6) Nyingwa, " x.26.
2 (M. C. Z. 13127–8) Vituri, " x.26.
9 (M. C. Z. 13133–7) Amani, Usambara Mtns., xi.26.
1 (M. C. Z. 13138) Mt. Lutindi, " 10.xii.26.
1 (M. C. Z. 13139) Bumbuli, " xii.26.

Diagnosis.—Without comparative material difficult to distinguish from the typical form from which it may be known by the lesser development of the spade-like, metatarsal tubercle, the more swollen finger tips (which are tapering in *stenodactylus*) and its larger size.

Arthroleptis s. uluguruensis is, however, even more nearly related to *A. s. variabilis* Matschie of the Cameroon Mountains, but the toes of the latter terminate in distinct, slightly pointed, disks though not so well-developed as in *A. adolfi-friderici* Nieden. In 1928, with Dr. Barbour, I considered *variabilis* a synonym of *stenodactylus* bridged by the frogs here described as *uluguruensis;* it is now considered that *variabilis* be recognized as a race of *stenodactylus.*

Other closely related frogs of which the Museum of Comparative Zoology possesses good series are *A. whytii* Boulenger, and *A. reichei* Nieden.

Coloration in life.—As published in 1928, Mem. Mus. Com. Zool., *50,* p. 210.

Measurements.—Type ♀. Head and body 35 mm., breadth of head 14 mm., length of head 12 mm., length of snout from nostril 2.5 mm., length of hind limb from anus 44 mm., length of fourth toe 9 mm.

In 1926 the writer collected three female *Hyperolius microps* Günther at Derema, Usambara Mountains and Dar es Salaam. In the last locality two smaller frogs of an allied species were captured; one of these was sexed in the field and found to be a male, the appearance of the other being similar it was assumed to be a male (in which I was wrong for dissection in the laboratory has shown it to be a female, a conclusion independently reached by Dr. L. Hoadley and Mr. H. Hechenbleikner to whom I am indebted for examining it) and a further error was made in assuming that these two frogs were males of *microps,* their differences from the females being attributed to sexual variation (*vide* Barbour & Loveridge, 1928, Mem. Mus. Comp. Zool., *50,* p. 225).

In 1929, however, *microps* was found breeding at Bagamoyo and a series of fifteen frogs, representing both sexes, were taken together with their eggs. It was at once obvious that the previous assumption was wrong. The possibility of the identity of the two small Dar es Salaam frogs with *H. pygmaeus* Ahl from Tanga or *H. petersii* Ahl from Mombasa

was carefully considered but they differ from these frogs in the same characters as those in which they differ from *microps;* in fact it seems probable that *pygmaeus* is a synonym of *microps* and possibly the same applies to *petersii* also. As I am unable to refer the Dar es Salaam frogs to any known species, they may be known as

Hyperolius usaramoae, sp. nov.

Type.—Museum of Comparative Zoology, No. 13,363. An adult ♂ from Mogogoni swamp, south of Dar es Salaam, Usaramo, Tanganyika Territory, collected by Arthur Loveridge, November 4, 1926.

Paratype.—Museum of Comparative Zoology, No. 13,364. An adult ♀ with the same history as the type, both being taken in the palm-leaf thatching of shelters constructed by rice-guarding natives at the edge of Mogogoni swamp.

Diagnosis.—♂ without a gular disk or pectoral fold. Closely related to *H. microps* Günther, from which it differs in the markedly shorter, therefore blunter and less acuminate snout; the longer hind limb for the tibio-tarsal articulation of the adpressed hind limb (without any straining) reaches well beyond the tip of the snout in the ♂ and far beyond in the ♀, while in 18 *microps* (from Dar es Salaam, Bagamoyo and Derema) it usually extends no further than the eye but occasionally as far as the nostril; the webs of the fingers and toes are more developed in *usaramoae* than in *microps;* the thighs of ♂ *microps* are pigmented, those of *usaramoae* colorless, while the contant and double row of lateral dots which lie above and below a silvery lateral line on the flanks of *microps*, are entirely lacking in *usaramoae.*

Coloration in life.—As published in 1928, Mem. Mus. Comp. Zool., *50*, p. 226 based on the ♂ type. In alcohol the only markings are numerous, scattered, minute flecks of pigmentation which may, or may not, concentrate on the canthal region to form a streak from nostril to eye.

Measurements.—Type ♂. Head and body to anus 16 mm., breadth of head 6.5 mm., length of head 6.5 mm., length of snout from nostril 1 mm., length of hind limb from anus 30 mm., length of fourth toe 5 mm.

Paratype ♀.—Head and body to anus 19 mm., breadth of head 7 mm., length of head 7 mm., length of snout from nostril 1.25 mm., length of hind limb from anus 32., length of fourth toe 5 mm.

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TWO BIRDS NEW TO SCIENCE FROM GREAT NAMAQUALAND.

By HERBERT FRIEDMANN.[1]

Among a series of birds collected by Mrs. L. O. Sordahl while stationed at the Smithsonian Institution's astrophysical observatory on Mt. Brukkaros in Great Namaqualand are two forms new to science. These are described below.

Erythropygia coryphaeus abboti, subsp. nov.

Type.—U. S. Nat. Mus., 331162, adult, unsexed, probably male, Fish River, 6 miles from Berseba, South West African Protectorate, collected March 1, 1931, by Mrs. L. O. Sordahl.

Subspecific characters.—Similar to *E. c. coryphaeus* of Cape Province but with the white tips of the outer rectrices very much smaller, not more than half as large as in *coryphaeus;* dimensions and general coloration similar to *coryphaeus.*

Mrs. Sordahl collected an adult female together with the type and considered them as a mated pair although the type itself was not sexed when skinned. The two birds were in a tree with two half grown young, probably their offspring.

This distinct new race of this ground robin is named in honor of Dr. Charles G. Abbot, Secretary of the Smithsonian Institution, at whose suggestion the observatory on Mt. Brukkaros was founded and under whose supervision its work was carried out.

The two specimens of *abboti* were compared with a small series from Cape Province (typical *coryphaeus*).

At present *abboti* is known only from the type locality. The mapping of its entire range is a matter that must await further material and exploration.

Both the type and paratype are in rather worn plumage.

Poliospiza albogularis sordahlae, subsp. nov.

Type.—U. S. Nat. Mus., No. 331186, adult male, collected on Mt. Brukkaros, S. W. Africa, July 15, 1930, by Mrs. L. O. Sordahl.

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

Paratype.—U. S. Nat. Mus., No. 331185, unsexed, adult, collected at the same place, July 14, 1930, by Mrs. Sordahl.

Subspecific characters.—Similar to *P. a. albogularis* in coloration, but with a longer, relatively less swollen bill; slightly larger size generally.

Dimensions of type.—Wing 86, tail 61; length of culmen from the base 15; width of maxillae at base 8 mm. (In *P. a. albogularis* males from South Africa the dimensions are as follows: wing 76–78; tail 54–57; length of culmen from the base 12.5–13, width of maxillae at the base 8.5–9 mm.).

This new race is named in honor of Mrs. L. O. Sordahl who maintained her interest in zoological collecting under rather trying and difficult circumstances, and who brought together a remarkably interesting little collection. So far the range of *sordahlae* is restricted to Mt. Brukkaros.

Lest it be thought that these two specimens may be *P. a. crocopygia* it may be said that they are as dark as typical *albogularis* and in no way suggest the paler coloration of the Damaraland race.

Mrs. Sordahl writes that, ". . . these birds stay on the mountain during the whole year, living on top of the mountain during the hottest months, November, December, January, and February. During the cool months . . . also found at the lower levels and on the foothills below the mountain." She often saw the birds in flocks in the large tree aloes, apparently eating the seeds. A bird bath and drinking fountain set up near the house was frequented also, as many as 30 birds at one time being counted on it.

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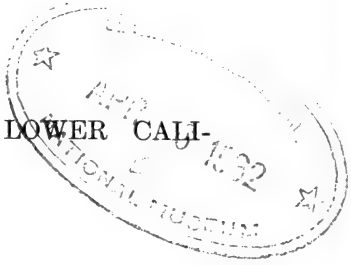

A NEW POCKET GOPHER FROM LOWER CALIFORNIA, MEXICO.

BY E. RAYMOND HALL.

In the course of installing, in the collection of the Museum of Vertebrate Zoology, recently accessioned California-taken material of the nearly-white pocket gopher, *Thomomys albatus* Grinnell, opportunity was taken to re-examine two strikingly small specimens from Las Palmas Cañon, Lower California, which I previously had regarded as young individuals. This closer examination revealed that one of the two was an adult and that in addition to small size there were other characters, some of a unique kind, which prevent identifying these animals with any previously named form. It may be known as

Thomomys bottae lucidus, new subspecies.

Type.—Female, adult, skin and skull; no. 39119, Mus. Vert. Zool.; Las Palmas Cañon, 200 feet altitude, west side of Laguna Salada (north of 32° N. latitude), Lower California, Mexico; October 30, 1927; collected by J. Elton Green, original no. 881.

Diagnosis.—Color near (g) light buff above and white below; size small (see measurements); interparietal wider than long; auditory bullae much inflated and evenly rounded anterolaterally.

Comparison.—As compared with *Thomomys albatus* Grinnell, its nearest relative, *lucidus* is even lighter colored, smaller in every measurement taken, has upper incisors more incurved, more widely separated temporal ridges, actually larger interparietal, more inflated auditory bullae which antero-laterally are evenly rounded rather than angular, and the zygomatic arch is only slightly, rather than greatly, thickened at the junction of the jugal and maxilla.

Remarks.—No specimen in the abundant material of *albatus* from numerous localities in California and Lower California shows a near approach in characters to *lucidus*, though collecting at selected places in the Laguna Salada and to the northeast of it probably will reveal intergrades.

Incidentally, it may be remarked that the extremely pale coloration of *lucidus* is in keeping with that of several other kinds of mammals obtained in Las Palmas Cañon all of which average a trifle lighter than do individuals of the same, or the nearly related, races from California territory near the mouth of the Colorado River.

Specimens examined.—Two from the type locality.

Measurements (in millimeters) of adult females of two subspecies of *Thomomys bottae*. Catalog numbers are those of the California Museum of Vertebrate Zoology. Nos. 39127–39131 are from five miles east of Cerro Prieto, 30 feet altitude, Lower California, Mexico.

		Total length	*Length of tail*	*Length of hind foot*	*Basilar length*	*Greatest length of nasals*	*Zygomatic breadth*	*Mastoid breadth*	*Least interorbital breadth*	*Alveolar length of upper molars*	*Greatest breadth of rostrum*
39119	*T. b. lucidus*, type	202	64	30	30.1	11.9	20.8	18.0	6.7	7.8	7.2
10620	*T. b. albatus*, topotype	230	75	34	32.8	12.8	23.5	19.5	6.8	8.0	7.9
39127	" "	230	60	34	34.9	14.2	25.7	20.6	6.8	8.5	8.5
39128	" "	225	72	32	34.3	13.9	24.5	20.0	6.9	8.8	8.4
39129	" "	235	85	34	34.0	13.8	24.5	19.9	6.4	8.0	7.7
39130	" "	235	85	34	34.1	13.4	23.6	19.9	6.7	8.0	8.0
39131	" "	239	73	33	32.9	12.5	24.0	20.2	6.8	8.0	8.1

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A NEW BLACK-TAILED JACK-RABBIT FROM IDAHO.

BY E. RAYMOND HALL AND WAYNE B. WHITLOW.

While making comparisons of specimens of black-tailed jack-rabbits, collected by one of us (Whitlow), it was found that the animal occurring in southeastern Idaho differs from any previously named form in a fashion which indicates the existence there of an unnamed subspecies. The name proposed for this geographic race, together with a statement of its differential characters, is as follows:

Lepus californicus depressus, new subspecies.

Type.—Female, adult, skull and skin; no. 47066, Mus. Vert. Zool.; ½ mile south of Pocatello, Bannock County, Idaho; December 7, 1930; collected by Wayne B. Whitlow, original no. 442.

Diagnosis.—Rostrum depressed so as to bring anterior ends of premaxillae below line of occlusal face of upper teeth and ventral margins of tympanic bullae; coloration gray.

Comparison and *remarks.*—As compared with *Lepus californicus deserticola* and *Lepus californicus wallawalla, depressus* has the anterior end of rostrum bent downward. The difference is best appreciated by placing the skulls so that the incisors project over the edge of a flat surface. The coloration of *depressus* is more gray than that of *deserticola* or *wallawalla.* That is to say, *depressus* is less buffy.

One specimen from three miles south of Springfield, Bingham County, Idaho, is more buffy than specimens from Pocatello, and in this respect approaches *deserticola* and *wallawalla.* This might be expected on account of the presence of more typical Great Basin desert-like terrain at Springfield than at Pocatello. Even so, this specimen has the anterior part of the rostrum depressed as in Pocatello specimens.

Of the skulls only, several are from immature animals, the youngest of which is only slightly more than half grown. However, even these have the anterior end of the rostrum more depressed than do specimens of *deserticola* of similar age.

Specimens examined.—Ten, all from southeastern Idaho: Three miles

northwest of Pocatello, 1 skull only; four miles west of Pocatello, 3; one-half mile south of Pocatello, 1; eight miles west of Pocatello, 1 skull only; ten miles west of Pocatello, 1 skull only; fifteen miles west of Pocatello, 1 skull only; three miles south of Springfield, 1; six miles west of Yale, 1 skull only.

Transmitted January 23, 1932.

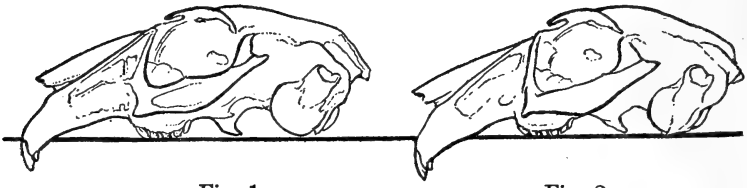

Fig. 1. **Fig. 2.**

Lateral views, x ½, of two skulls of *Lepus californicus* to show depressed anterior end of the rostrum in *L. c. depressus.*

Fig. 1. *Lepus californicus deserticola,* adult female, no. 40875, Mus. Vert. Zool., from Arlemont, 4800 feet, Fish Lake Valley, Esmeralda Co., Nevada.

Fig. 2. *Lepus californicus depressus,* type, adult female, no. 47066, Mus. Vert. Zool.

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THE STATUS OF THE HORNED LIZARD *PHRYNOSOMA BREVICORNIS*, DESCRIBED FROM TEXAS BY E. G. BOULENGER (1916).

BY CHARLES E. BURT.[1]

During the course of a number of studies involving various series of horned lizards collected in the Middle West, especially those of Texas, I have constantly looked for an individual showing the characters of *Phrynosoma brevicornis*, which was described by E. G. Boulenger from an unknown locality in Texas in 1916; and during an extensive survey of the literature (preparatory to a phylogenetic revision of the genus) I have been unable to relegate it to the synonymy of any of the described species of *Phrynosoma*. This condition of affairs has lead me to write to Mr. H. W. Parker of the British Museum of Natural History for further information concerning the type specimen. In reply to my inquiry pertaining to the exact condition of the occipital horns and other details, Mr. Parker has kindly written as follows:

"On examining the median occipital horns to see whether there was any sign of mutilation, I found that the whole top of the head was covered with dried mucus and sand. On removing this I found that the 'spines' had the form of a low rounded hump, covered with granules and surrounded at the base on the posterior side by a ring of enlarged flat scales. Further the lateral occipital horns were worn down or broken off, and their exposed surfaces were similar to the median prominences. Then I noticed that the whole of the head, from the middle of the eyes, was flat on top and covered with the same small granular units, quite unlike the snout which has irregularly rugose scales. A large patch on the dorsum, on the left side in front of the sacrum, has a similar worn and granular appearance; also, there are other spots of the same nature on the back and neck. I have

[1]Professor of Biology, Southwestern College, Winfield, Kansas.

very little doubt that these patches are abrasions, and once this possibility is admitted, there is no reliable way of determining the amount of actual substance that has been worn away. The fore part of the snout is perfect, so that when I attempted to find a species that would agree with the *certain* characters of the snout and ventral surface (as well as with the locality) of *brevicornis* I was lead to select what we identify as *P. cornutum* from Texas. That *brevicornis* is based on a pathological individual I have no doubt, and I strongly suspect that it is none other than *P. cornutum.*"

Specific information about the type of *P. brevicornis,* as transmitted by Mr. Parker, may be summarized as follows: nostrils well above the superciliary ridge, less than 3 mm. apart; nasal scales separated by only three internasals;[2] ventral scales keeled; femoral pores large, without expanded cores; no enlarged postanals; male.

The type specimen of *P. brevicornis* has been eviscerated and the limb girdles are cut through, so that the limbs are not anchored. This makes it difficult to measure the various trunk dimensions with accuracy. Some approximate measurements in millimeters are listed below.

Tail (incomplete)	23
Snout to anus	75
Hind limb	44
Fore limb	34
Snout to fore limb	24
Width of head:	
Across superciliary ridge	11
Between tympana	16

After the receipt of the excellent information cited above, there seems to be no particular doubt but that *P. brevicornis* is in reality only a mutilated specimen of the commonest horned lizard of Texas—*P. cornutum.* Prior to its death the type individual was kept alive in the Gardens of the Zoological Society of London and it seems entirely logical to believe that the creature may have received its abrasions by rubbing against some such material as sand grains or screen wire while being held in captivity in the United States prior to its shipment to London, during its long journey across the ocean, or even later at its temporary quarters in the Zoological Park.

Literature Cited.

Boulenger, E. G.

1916. A New Lizard of the Genus *Phrynosoma,* Recently Living in the Society's Gardens. Proc. Zool. Soc. London, p. 537, pl. 1, figs. 1–3 (*P. brevicornis*).

[2] "The pholidosis of the snout agrees quite well with that of a specimen of *P. cornutum* from Duval County, Texas, even to the presence of an enlarged tubercule in the middle of the interorbital region. There is also an agreement in the two specimens in the type of ventral scutellation."—H. W. P.

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SOME NEW TREEHOPPERS FROM THE SOUTH AND SOUTHWEST.

BY E. D. BALL,
University of Arizona, Tucson.

The small treehoppers of the genus *Cyrtolobus* and its allies occurring in the deciduous forest region of the eastern United States have received considerable attention in the past, thanks to the preliminary work of Goding and Van Duzee and the more detailed and critical studies of the late L. L. Woodruff. All the known species have been found on oaks and mostly on the deciduous species. The writer collected on the different species of live oaks in Florida and later in Arizona found that the species occurring on these oaks were in the main strikingly different from their relatives of the deciduous forest region and that the majority of them were new, including one new generic type.

Grandolobus Ball, n. gen.

Resembling *Smilia* in general size and form but with the crest shorter and farther back from the metapodium, the apical process of the pronotum long and slender as in *Cyrtolobus*.

Face broader than in *Smilia*, as broad as in *Cyrtolobus*, the metapodium broader and rounding over above as seen from the front rather than triangular as in *Smilia*. Pronotum, as seen from side, long and slender with a rather short high, foliaceous crest arising just back of the line of the metapodium in a fairly symmetrical arch a little longer than its height. This crest occupies a little over half of the length of the pronotum arising with a slight sinuation in front and with an obtuse angle behind. There is a major inflation in the middle and a minor one near the posterior angle. The elytra are long and narrow with typical *Cyrtolobus* venation, the apical cell small, almost round with a long pedicel.

Type of the genus *Cyrtolobus grandis* V. D. *Cyrtolobus inaequalis* Fowl. described from a male is no doubt this species and *vittatipennis* Fowl. which

precedes it on the page is probably the female, in which case the name *vittapennis* will supersede both *grandis and inaequalis*. This species has always been a misfit in the genus *Cyrtolobus* and rendered that genus hard to define. In a linear arrangement it will come between *Smilia* and *Atymna*.

Evashmeadea Goding with a single species *carinata* Stal. (=*concinna* Godg., vide Goding) (=*discoidalis* Fowl. (not Emmons) vide Funk.) should follow.

Cyrtolobus woodruffi Ball, n. sp.

A pale green and pink species in life, fading to greenish straw or creamy with a long narrow tawny saddle. Resembling *acutus* but with the crest much higher in front. Length ♀ 5.5 mm., ♂ 4.5 mm.

Metapodium almost upright, continued as a large foliaceous crest extremely high in front where it rounds over to an almost straight dorsal line which slopes with but a slight sinuation into the apical process. Viewed from above the pronotum is long, narrow and wedge-shaped. The venation is unstable, with a strong tendency to the formation of extra cells along costa, and an enlarged apical cell which may have an obtuse angle at the petiole.

Color, greenish or creamy, slightly mottled, almost unmarked except for a long narrow saddle of tawny or pinkish which may be interrupted by oblique pale bands. Nervures of elytra almost white.

Holotype ♀, allotype ♂, and 7 paratypes Santa Rita Mountains, Arizona, May 11, 1930, and 6 paratypes Patagonia, September 7, 1929, all taken by the writer.[1]

This is a strikingly distinct species in both shape and color and is named for the late L. L. Woodruff, whose careful and painstaking work gave us the first real understanding of this group.

Cyrtolobus oblongatus Ball, n. sp.

Form and color of *acutus* nearly, slightly longer and broader with the crest evenly rounding rather than highest anteriorly as in that species. Male testaceous rather than dark. Length ♀ 6 mm., ♂ 5 mm.

Pronotum a rather broad wedge as seen from above but narrower than in *intermedius*. Evenly rounding as seen from the front, not as elevated as in *acutus* nor as flat as in *intermedius*. Crest arising on the line of the humerals evenly rounding back to the posterior sinus, the highest point farther back than in *acutus* but anterior to that in *intermedius*. Venation normal, the apical cell short.

Color pale testaceous on a creamy base paler than in *acutus*, a pair of broad, tawny stripes on metapodium in the darker females, the usual oblique saddle pattern rather obscure in the females except for the two dark spots on crest which are emphasized. The males are nearly solid testaceous, except for the definite white saddle pattern.

Holotype ♀, allotype ♂ and nine paratypes taken by the writer in the Santa Rita Mountains, Arizona, May 11, 1930. The paler color and dark

[1]All types in the author's collection, unless otherwise stated.

dorsal spot of the female and the testaceous instead of dark males will at once separate the species.

Cyrtolobus arizonae Ball, n. sp.

Size and form of *oblongatus* nearly tawny with a still more obscure pattern. Apical cell shorter and broader and usually extra cells along costal margin. Length ♀ 6 mm., ♂ 5 mm.

Pronotum resembling *oblongatus* slightly narrower with the metapodium higher. Crest long with the arch about as in *acutus*, the posterior sinus subobsolete. The clypeus has a strong carina which extends below into an acute point. Venation inclined to be irregular with supernumerary cells along costa. The apical cell very broad and short, angle at the petiole obtuse.

Color tawny, mottled on a creamy base in the female with even less pattern than in *oblongatus* and no dark spot above. Male tawny with the saddle pattern light.

Holotype ♀, allotype ♂ and eleven paratypes taken by the writer in Rustler's Park, Chiricahua Mountains, Arizona, July 5, 1930. The obtuse cell, uniform color and acute clypeus will readily separate this species.

Cyrtolobus coronatus Ball, n. sp.

Resembling *acutus*, but much larger with an exceptionally long and acute apical process and long petiole to the apical cell. Pale tawny almost unmarked or with a white crown on metapodium. Length ♀ 6.5 mm., ♂ 5.5 mm.

Pronotum broader than in *acutus*, long and slender with the lower line long and straight. Crest arising well back of the humeral angles, short, rounding, highest nearer front as in *acutus* with a definite sinus. Clypeus not carinate at apex, bluntly recurved. Apical cell small, the petiole extremely long.

Color pale almost uniform tawny except for the narrow dark line on the carinae and a broad dark margin to a white or creamy "crown" on the metapodium formed by the coalescing above of the testaceous stripes in a dark arch. Male slightly darker, lacking the crown, but with a definite saddle pattern, the anterior stripe of which extends as far forward as in *arcuatus*.

Holotype ♀ and three paratype females, Santa Rita Mountains, Arizona (label Tucson), April 27, 1930, allotype ♂ and six paratype females Santa Rita Mountains, May 11, 1930, and two paratype males and three females Santa Catalina Mountains, April 23, 1931, all taken by the author. The long apical process and long petiole render this a strikingly distinct species.

Cyrtolobus frigidus Ball, n. sp.

Resembling *clarus* in outline, but smaller and narrower, smaller and narrower than *acutus* with a higher crest. Pale tawny with an obscure saddle pattern. Length ♀ 4.5 mm., ♂ 3.5 mm.

Pronotum with crest as seen from side resembling *clarus*, higher in front than in *togatus*, which it otherwise resembles. Metapodium nearly upright, the median third inflated and strongly carinate so as to overhang the front. Crest arising on the metapodium continuing in a uniform arch with only a faint sinuation to the apex, as in *togatus*, but higher. Resembling *clarus*, but higher in front, and more compressed throughout. Pronotum as seen from above narrower behind than in *clarus*, resembling *acutus*.

Color, female pale tawny as in *fuliginosus*, two quadrangular smoky areas on crest set off by three equal white areas, these in turn set off at the ends by smaller smoky spots, a pair of irregular, often triangular spots of more definite red on the sides of the metapodium just inside the eyes. A broad, obliquely narrowing darker area on the lower part of the pronotum just under the median white spot. Apex of elytra dark: male with the face and pronotum black, three white spots on crest as in female, the outer ones continued as oblique bands that approach each other at the lower margin, the anterior band angled.

Holotype ♀ and eleven paratype females Glen Oaks, Arizona, July 19, 1929. Allotype ♂ and two paratype females Globe, May 18, 1930, all taken by the writer. This is one of the smallest and most striking species of the genus; the males are only about two-thirds the size of *parvulus* and quite different in marking.

Ophiderma tricincta Ball, n. sp.

Size of *difinita* nearly, slightly longer and narrower, much narrower and slightly smaller than *compacta*. Pale brown with two white bands, male very dark with three white bands, the median one widening below. Length ♀ 5.5 mm., ♂ 5 mm.

Pronotum as seen from side with a low almost straight dorsal line arising from a rounding metapodium; as seen from above long and tapering posteriorly much more than in the other species. Apical cell of elytra almost round, the pedicel much longer than the cell.

Color, female pale tan anteriorly, testaceous posteriorly, separated by an oblique white band that is broadened below, a second narrow band before the apex. Male metapodium tan or darker, all the rest of pronotum smoky or black with three white bands, the anterior one margining the metapodium in an oblique semicircle. The second one across the middle and definitely widening below, the third before the apex and parallel margined.

Holotype ♀, allotype ♂ and eight paratypes from the Santa Catalina Mountains, June 30, 1930, four paratypes from the Chiricahua Mountains, July 5, 1930, collected by the author, and one paratype from the California Academy of Sciences collected by J. O. Martin in the Huachuca Mountains, July 7, 1930, all taken at high elevations in Arizona. The three-banded male will at once identify this species.

Ophiderma infantilis Ball, n. sp.

Resembling *australis*, but much smaller and somewhat darker. Smaller and more tawny than *definita* without the arch over the humerals. Pale

tawny with irregular creamy mottling, including two irregular transverse bands, a smoky band across middle of elytra. Length ♀ 5 mm., ♂ 4.5 mm.

Pronotum moderately pubescent; as seen from side with the dorsal line almost straight, except at the extremities; as seen from above regularly narrowing posteriorly, with less constriction before the apex than in *definita*. Apical cell of elytra of moderate size, longer than broad with a long pedicel as in *australis*.

Color slightly mottled reddish brown with a pink reflection in the female, a pair of pink crescents above the eyes, traces of four irregular creamy stripes running up over the metapodium and an irregular light band crossing the middle of pronotum becoming enlarged and oblique as it approaches the margin; a subapical band faintly indicated, the area between the two bands a little darker. Male very similar to the female, brown without the pink shade. The crescents black, the subapical band broad, and usually an area more definitely mottled with creamy behind the humeral angles and sometimes extending back to the first transverse band. A transverse smoky band on the middle of elytra in both sexes and a darker spot at apex involving two apical cells.

Holotype ♀, allotype ♂ and three paratypes April 3, 1927, and six paratypes May 5, 1928, all taken at Sanford, Florida, by W. E. Stone and the writer.

Examples of this species from Florida have been referred to *definita* in the past, but *definita* is a larger species with a dark male with a definite saddle pattern and is probably confined to the deciduous forest region, while *infantilis* and *australis* are southern and both have males that resemble the females.

Ophiderma stonei Ball, n. sp.

Resembling *flavicephala* in form and color, broader with the posterior third of pronotum definitely inflated and the lateral stripe broader, shorter and yellow instead of white. Length ♀ 6 mm., ♂ 5.5 mm.

Pronotum with long rather sparse pubescence, higher and more definitely arched than in *flavicephala* with a depression just back of the middle. As seen from above broad with two inflated areas, one very broad anteriorly and tapering to the middle, the other just behind this almost circular and about half its diameter from the apex. Apical cell of elytra longer than wide, oblique, its petiole attached above the middle and arching back to its attachment on the anteapical.

Color rich chestnut in both sexes, lighter and with a more definite reddish cast than in *flavicephala*. The lateral stripe, lemon yellow, broader than in that species, especially behind the humeri, where it is broadened and slightly arched and terminates abruptly rather than white, long, narrow and tapering at the apex as in *flavicephala*.

Holotype ♀ April 17, 1927, allotype ♂ April 9, 1927, nine paratypes from April 9 to May 15, Sanford, Florida, one Coca, May 22, all taken by W. E. Stone and the writer, and one male, Florida (Glasson). This is a strikingly distinct little species that has been confused with *flavicephala* in the past, the inflated pronotum and oblique apical suggest the

genus *Xantholobus*, and it may be necessary to transfer this species and *nigrocincta* V. D. to that genus when more careful studies of their biologies and food plant relationships have been made.

Ophiderma panda Ball, n. sp.

Resembling *pallida* in form and irrorate pronotum but much larger, with extremely long and acutely pointed elytra and a white-margined brown saddle. Length of male 8 mm.

Pronotum in male almost destitute of hairs, long, low as in *pallida*, with a slight sinuation just behind the metapodium, then a trifle arched for one-half the distance to the long acute apex, metapodium even lower and more retreating than in *pallida;* humeral angles inconspicuous; as seen from above the pronotum is long, slender and tapering to a sudden constriction beyond which there is a long slender point. Elytra extremely long and slender. Exceeding the pronotum by one-fourth their length their apices oblique with an acute angle below. The apical cell about equally long and broad, the petiole equalling the length of the cell.

Color, male face creamy white with a broad, black sub-marginal band all around. Pronotum with the anterior third finely marbled with creamy and chestnut posterior two-thirds brown shading out to chestnut towards the center, an irregular white margin on either side which joins a narrow transverse white band that bisects the brown just before the constricted apex. Elytra milky hyaline the nervures dark.

Holotype ♂ taken in the Chiricahua Mountains, Arizona, July 5, 1930, by the writer. This is a strikingly distinct species in a number of characters; its only close relative is *pallida* the male of which has not been described. In order to bring out the striking difference it is characterized below.

Ophiderma pallida Van Duzee.

Male resembling the female in form and color. Slightly smaller and darker. Length 5.5 mm.

Pronotum destitute of hairs, low, transversely rounding, the dorsal line slightly concave and the apex long and acute as in the female. Color, face creamy with interrupted black lines. Pronotum marbled with creamy and fuscous, a line on the base of metapodium, and the callosities black.

Allotype ♂ Tucson, Arizona, taken by the writer May 23, 1929. This species appears earlier in the season than its relatives, which may explain why no males have been taken previously. Out of some forty examples collected by the writer only the one male appeared.

Xantholobus coconinus Ball, n. sp.

Resembling *inflatus* in size and general form, the carinae on pronotum high, foliaceous. Pale with two distinct chestnut bands. Length ♀ 5–6 mm.

Pronotum as seen from above slightly narrower than in *inflatus*, the anterior and posterior inflations similar. The median inflation definitely farther forward and fused with the apex of the anterior one. As seen from

side the dorsal line is an almost uniform curve and almost as high as in *Cyrtolobus ovatus* instead of a low and irregular hump on the posterior two-thirds as in *inflatus*. Elytra short, scarcely exceeding and almost concealed by the deep and abruptly terminated pronotum; apical cell short and broad with an obtuse angle at the petiole as in *inflatus*.

Color, pale dirty cream, with a chestnut band across the median and another across the posterior inflation, a faint tawny stripe running back over the metapodium from just inside either eye.

Holotype ♀, and five paratype females Flagstaff, Arizona, August 7, 1924, and four paratype females Grand Canyon, Arizona, August 1, 1930, all collected by the writer. This species has been confused with *inflatus* but a side view will instantly separate them. Collecting has been so late in the season that no males have been taken. Males of *inflatus* taken in June or early July are black with white ornamentation or colored like the females.

Xantholobus altus Ball, n. sp.

Resembling *nitidus* but slightly larger and much more broadly inflated posteriorly. Form and color of *inflatus* nearly but much smaller and smoother. Length ♀ 4 mm., width 2 mm.

Pronotum from above almost parallel margined from behind the humerals to the posterior inflation, then abruptly narrowing to the blunt apex; in profile straight from the metapodium to the posterior inflation except for a slight hump over the median enlargement, then abruptly decliveous. Elytra very slightly exceeding the pronotum but more exposed than in *coconinus*. The apical cell short and broad about right angled at the attachment of the short petiole.

Color of *inflatus* nearly pale brown with chestnut markings on the two posterior inflations set off by light margins.

Holotype ♀ and four paratype females Chiricahua Mountains, Arizona. July 6, 1930, and three females from Williams, Arizona, July 13, 1929, all collected by the writer. The small size and almost straight profile will at once separate this species.

Xantholobus hirsutus Ball, n. sp.

Size and form of *nitidus* nearly broader posteriorly with the median inflation prominent. Reddish testaceous densely hairy. Length 4 mm.

Pronotum much narrower posteriorly than in *altus* but definitely more inflated than in *nitidus*, with a definite median inflation that is lacking in that species; in profile more arched than in *altus* but much less than in *inflatus*, whole pronotum and face densely hairy. Elytra exceeding the pronotum by the width of the appendix, the apical cell broad and obtusely angled at the pedicel.

Color, female, chestnut red unmarked, male a slightly darker shade with the hairs dark. Crescents above the eyes the lower part of the face and below smoky or black, a dark area behind the humeral angle on each

side, an oblique white dash behind this and a narrow white band behind the posterior inflation.

Holotype ♀ Patagonia, May 25, 1930, allotype ♂ Santa Rita Mountains, May 11, 1930, and one paratype male Tucson, April 27, 1930, all collected in the mountains by the writer. The dense hairy cover and the bright chestnut color will at once distinguish this species.

Vanduzea laeta var. **nolina** Ball, n. var.

Form and structure of *laeta* nearly. Bright green in life fading to straw. Length 4–5 mm.

Slightly larger than typical *laeta*, with a broader and slightly more arched profile to pronotum. The pronotum is less pubescent, the apical cell is even broader and shorter.

Color bright green in life, fading to greenish straw, without markings. Occasionally an example will show the dark mark back of the humeri surrounded by the light crescent, a faint light band near the apex. In the darkest males there is a smoky cloud in the apex of the elytra.

Holotype ♀, allotype ♂ and nine paratypes. Patagonia, Arizona, July 20, 1930, and 5 paratypes, Yarnell Heights, Arizona, October 8, 1929, all taken by the author. This was at first included as the extreme reduction in color of var. *segmentata*, but later observations indicated that it was a distinct variety or probably a distinct species with a strikingly different food plant.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

NEW OPISTHOGLYPHOUS SNAKES OF THE GENERA CROTAPHOPELTIS AND TRIMERORHINUS FROM ANGOLA AND KENYA COLONY.

BY ARTHUR LOVERIDGE.

In a collection of reptiles and amphibians from Angola, received as an exchange from the University of Alberta, is a snake which I am unable to identify with any known African species. There seems to be no reason to doubt the validity of its data for the score of species represented in the collection were all well known Angolan forms.

Unfortunately, though the body is in perfect condition, the head seems to have been stamped upon, the mouth was caked with sand and the teeth badly broken. After restoration, however, it appears to be an opisthoglyph and, if one ignores the teeth, is in complete agreement with the definition of *Leptodeira* Günther as set forth by Boulenger (1896, Cat. Lizards Brit. Mus., *3*, p. 89) from which genus the African species have been separated under the name *Crotaphopeltis* Jan.

As it is not conspecific with *hotamboeia* or any of the recently described *Leptodeira*, *Crotaphopeltis* or allied genera such as *Tarbophis*, in appreciation of the assistance rendered by Mr. Benjamin Shreve, an honorary worker in the herpetological department of the Museum of Comparative Zoology, it may be known as

Crotaphopeltis shrevei, sp. nov.

Type.—Museum of Comparative Zoology, No. 32,471. An adult ♂ from Missao de Dondi, Bella Vista, via. Lobito, Angola, collected by Mr. Kenneth H. Prior in 1931.

Diagnosis.—An arboreal species with anal entire, an exceptionally long tail, and a high ventral count. Somewhat intermediate between *C. h. hotamboeia* (Laurenti) and *C. duchesnii* (Boulenger) but not closely related

to either; differing from the former in its more numerous subcaudals, from the latter in the shape of its head and the less slender anterior portion of its body.

Description.—Rostral once and a half as broad as deep, scarcely visible from above; internasals much shorter than the prefrontals; frontal as long as broad, as long as its distance from the end of the snout, shorter than the parietals; loreal as long as deep; one preocular; two postoculars; temporals 1+2; eight upper labials, third, fourth and fifth entering the orbit; two well developed pairs of chin shields, the anterior twice as long as broad, yet broader than the second, and in contact with five lower labials; following the well developed chin shields are two pairs of less differentiated shields which may be considered as chin shields also. Scales smooth in 19 rows at midbody, 23 on neck at a distance of ten scales behind the parietals, 15 posteriorly at a point ten scales in advance of the anal. Ventrals somewhat angularly bent laterally 203; anal entire; subcaudals 81.

Color in alcohol.—Above, uniformly blue-black (greenish in life ?). Below, lower labials dusky, throat and centre of ventrals on anterior portion of body white, the dorsal coloring impinging on the outer border of the ventrals progressively till the white of the median area is obscured posteriorly and the subcaudals are uniformly plumbeus, being but slightly paler than the dorsal aspect of the tail.

Measurements.—Total length 930 mm.; head and body 740 mm.; tail 190 mm.

Having recently examined over ninety examples of the snake known to South Africans as the Striped Schaapsteker, I find that those from the northern part of its range may be differentiated from the typical form by the higher ventral count shown by the forty-three northerly snakes. For this northern race, therefore, I propose the name of

Trimerorhinus tritaeniatus multisquamis, subsp. nov.

Psammophis brevirostris Loveridge (non Peters), 1916, Journ. East Africa & Uganda Nat. Hist. Soc., *10*, pp. 80, 85, 86 : Kenya Colony localities.

Trimerorhinus tritaeniatus Loveridge (non Günther), 1923, Proc. Zool. Soc. London, p. 882 : Nairobi and Arusha. Loveridge, 1929, U. S. Nat. Mus. Bull. 151, p. 31: Kenya Colony localities.

Type.—Museum of Comparative Zoology, No. 18,213. A ♀ from Nairobi, Kenya Colony, collected by Arthur Loveridge, August 21st, 1915.

Paratypes.—Museum of Comparative Zoology, No. 17,976 from the Loita Plains, Kenya Colony, collected by C. P. Curtis, Jr., in 1923, also eight specimens from Kenya Colony in the Coryndon Memorial Museum, Nairobi as listed in the 1916 citation given above; twenty-two specimens from Kenya Colony in the United States National Museum as listed in the 1929 citation; seven specimens from Kenya Colony and Abyssinia in the Field Museum of Natural History as referred to in a report on their African collections (still in manuscript); three specimens from Kenya Colony and Mpwapwa, Tanganyika Territory referred to *T. tritaeniatus* by Boulenger, 1896, Catalogue Snakes British Museum, *3*, p. 140.

Diagnosis.—Differs from the typical form in its more numerous ventral scales which may be contrasted thus:

Ventrals 145 to 163[1]; subcaudals 51 to 65 (based on 55 specimens).
Range—Africa south of the Central Railway of Tanganyika Territory.....*T. t. tritaeniatus*
Ventrals 162 to 183; subcaudals 54 to 66 (based on 43 specimens).
Range—East Africa north of the Central Railway of Tanganyika Territory.....*T. t. multisquamis*

Description.—Midbody scale-rows 17; ventrals 167; anal divided; subcaudals 57; labials 8, the fourth and fifth entering the orbit.

Measurements.—Type ♀. Head and body 660 mm., tail 144 mm.

Distribution.—Making the Central Railway of Tanganyika (which connects Kigoma on Lake Tanganyika with Dar es Salaam on the Indian Ocean) the dividing line is not so arbitrary as may appear at first sight for the railway was surveyed on relatively lower ground avoiding mountains while in the tropics the Striped Schaapsteker is a snake of the highlands. The most southerly record for the northern race is Mpwapwa, about ten miles north of Gulwe Station. The most northerly record for the southern form is a hundred miles south of the track in the Iringa highlands.

[1]Günther's counts of 157–169 for the types of *T. variabilis* are erroneous and should read 155–159. I am obliged to Mr. H. W. Parker for this information.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW CACOMISTLE FROM ARIZONA.

BY E. A. GOLDMAN.

Bassariscus astutus ranges as a species from Oregon to southern Mexico. Study of Arizona material and general comparisons indicate the desirability of recognizing a new geographic race in the area along the continental divide in eastern Arizona and western New Mexico, and probably extending southward into the Sierra Madre of Mexico.

The new subspecies is described as follows:

Bassariscus astutus arizonensis, subsp. nov.

ARIZONA CACOMISTLE.

Type.—From Cosper Ranch, Blue River, about 12 miles south of Blue, Greenlee County, Arizona (altitude 5,000 feet). No. 205388, ♂ adult, U. S. National Museum (Biological Survey collection), collected by E. A. Goldman, September 1, 1914. Original number 22461.

Distribution.—Arizona south and east of the Colorado River, southwestern New Mexico, and probably northern Sonora and northwestern Chihuahua.

General characters.—Size small, color rather dark. Most closely allied to *Bassariscus astutus flavus* of Texas, but smaller, with blacker face and grayer, less yellowish, general coloration. Similar in size to *B. a. nevadensis* of southern Nevada, but upper parts darker; face, top of head, and base of ears distinctly blacker; feet more clouded with dusky (nearly clear light buff in *nevadensis*); skull differing in detail. Smaller than *B. a. octavus* or *B. a. raptor* of California, with narrower black rings on tail than the latter.

Color.—Type: Ground color of upper parts in general buffy grayish, the dorsum rather heavily lined or overlaid with black, the dark hairs thinning out along sides and over thighs; top of head, and posterior basal half of ears blackish; face, including sides of muzzle, eyelids, and cheeks extensively black, relieved by the contrasting pure white markings over and under eyes usual in the group; under parts, including inner sides of limbs, between light buff and light ochraceous buff; ears clothed with short grayish white hairs on distal half, becoming black on posterior base as already noted; outer sides of forearms mixed cinnamon buff and dusky;

fore feet grayish above, a narrow but distinct black line along outer side of sole; hind feet grayish clouded with dusky over metatarsus, soles blackish from heels to base of toes, the toes whitish; tail with eight alternating black and white rings, and a black tip, the black rings broader above and the white rings broader below. *Young* (about half grown): Similar to adults but upper parts more extensively black.

Skull.—Closely resembling that of *B. a. flavus*, but usually smaller. Very similar to that of *B. a. nevadensis*, but rostrum slightly broader; zygomata rather widely spreading; audital bullae broader anteriorly, the anterio-internal border more extended and more completely filling space between meatus and postglenoid process; foramen ovale usually larger; dentition about the same. Similar to that of *B. a. raptor*, but smaller; audital bullae shorter, more rounded, and differing in detail in about the same respects as from *nevadensis:* foramen ovale usually larger, opening more directly downward.

Measurements.—Type: Total length, 775 mm.; tail vertebrae, 390; hind foot, 70. Average of three adult female topotypes: 720 (700–742); 361 (330–381); 66 (63–69). *Skull* (type): Greatest length, 77.8; condylo-basal length, 75.8; zygomatic breadth, 47.4; breadth of rostrum (over root canine), 13.7; interorbital breadth, 14.5; canine-molariform toothrow (alveoli), 29.5; upper carnassial, crown length, 7, crown width, 4.8.

Remarks.—The ranges of *Bassariscus astutus arizonensis* and *B. a. flavus* are confluent in New Mexico. Slight but apparently fairly distinctive cranial details pointed out indicate, however, that the Grand Canyon and lower reaches of the Colorado River may be an effective barrier separating *arizonensis* from *B. a. nevadensis*. Some evidence on this point is presented by a specimen from the south side of the Colorado River at the mouth of Diamond Creek, on the Hualpai Indian Reservation. This specimen is not only darker than those from the north side but agrees with topotypes of *arizonensis* in the anterior broadening of the audital bullae, a character shared with *flavus* and distinguishing both *arizonensis* and *flavus* from *nevadensis* and the California forms of the group. *B. a. arizonensis* and *nevadensis* may be expected to intergrade along the upper course of the river, above the Marble Canyon where the stream might be crossed on the ice in winter. The species has been recorded from southwestern Colorado but no specimens from that region have been examined by me. General comparisons show that Hall (Univ. Calif. Pub. Zool., vol. 30, no. 3, p. 44, Sept. 8, 1926) and some previous authors were warranted in assigning *Bassaris raptor* Baird to California. The type of *raptor* agrees closely in size, width of black tail rings and in cranial details with some California specimens, and in combination of characters exhibits a corresponding departure from examples of the species collected east of the Colorado River.

Specimens examined.—Total number, 10, as follows:

Arizona: Cosper Ranch, Blue River (type locality), 5; Colorado River (mouth of Diamond Creek), 1; Graham Mountains (skull only), 1; Santa Rita Mountains, 1; Tinajas Altas (skull only), 1.

New Mexico: Redrock, 1.

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PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW RODENTS FROM ARIZONA.

BY E. A. GOLDMAN.

The collection, during recent years, of additional specimens of small rodents from imperfectly known parts of Arizona has revealed the existence of two hitherto unrecognized geographic races. One of these is a distinctive form of the small pocket mouse, *Perognathus flavus*, and the other a regional representative of the canyon mouse, *Peromyscus crinitus*.

The new subspecies are described as follows:

Perognathus flavus hopiensis subsp. nov.

PAINTED DESERT POCKET MOUSE.

Type.—From Oraibi, Hopi Indian Reservation, Navajo County, Arizona (altitude 6,000 feet). No. 248014, ♀ adult, U. S. National Museum (Biological Survey collection), collected by G. G. Cantwell, June 5, 1927. Original number 3027.

Distribution.—Painted Desert region of northeastern Arizona, southeastern Utah, southwestern Colorado, and northwestern New Mexico.

General characters.—A pallid subspecies most closely resembling *Perognathus flavus bimaculatus*, of central Arizona, but upper parts distinctly lighter ochraceous buff, less heavily overlaid with black. Similar to *P. f. flavus* of western Texas, but paler, with a heavier skull. Differing strikingly from *P. f. fuliginosus*, of the San Francisco Mountain region, in much paler coloration (upper parts in *fuliginosus* rich ochraceous buff heavily overlaid with black).

Color.—Type: Upper parts light ochraceous buff, purest on cheeks, along sides and on outer surfaces of hind limbs, the top of head and general dorsal area finely and thinly lined with black; under parts white; buff post-auricular spots conspicuous as usual in the species; ears grayish externally, black internally, with small whitish spots at anterior base; forelimbs and hind feet white; tail grayish or light brownish above, somewhat paler below.

Skull.—About like those of *P. f. bimaculatus* and *P. f. fuliginosus*.

Compared with that of typical *flavus* the skull is usually decidedly larger, with a relatively heavier rostrum and broader nasals.

Measurements.—Type: Total length, 115 mm.; tail vertebrae, 50; hind foot, 15. An adult male from Keams Canyon, 113; 50; 17. *Skull* (type): Occipitonasal length, 19.7; greatest breadth (across audital bullae), 12; interorbital width, 4.4; length of nasals, 7; width of nasals (in front of incisors), 2.2; length of interparietal (median line), 2.5; greatest width of interparietal, 3.2; maxillary toothrow, 2.9.

Remarks.—Perognathus f. hopiensis, like some other Painted Desert forms, is characterized by light coloration. It contrasts strongly with the extremely dark geographic neighbor, *P. f. fuliginosus*, of the San Francisco Mountain region. It bears about the same color relation to *fuliginosus* that *Perognathus apache apache* does to *P. a. cleomophila*. Specimens from Holbrook and Winslow, near the southern edge of the Painted Desert, are intermediate but seem more properly referable to *P. m. bimaculatus*. Those from northwestern New Mexico grade toward typical *flavus*.

Specimens examined.—Total number, 25, as follows:

Arizona: Ganoado, 1; Keams Canyon, 1; Oraibi (type locality), 1.

Colorado: Ashbaugh's Ranch, 2.

New Mexico: Gallup, 2; Fruitland, 2; Shiprock, 1; Wingate, 2.

Utah: Bluff, 2; Noland's Ranch, San Juan River, 11.

Peromyscus crinitus disparilis, subsp. nov.

SOUTHERN ARIZONA CANYON MOUSE.

Type.—From Tinajas Altas, Gila Mountains, Yuma County, Arizona (altitude 2,000 feet). No. 202989, ♂ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by E. A. Goldman, November 22, 1913. Original number 22304.

Distribution.—Southwestern Arizona and doubtless adjoining parts of Sonora, Mexico, in mountains extending across the international boundary.

General characters.—A small pale, pinkish buff subspecies. Similar to *Peromyscus crinitus stephensi*, of southeastern California, but upper parts richer, more intense pinkish buff, and cranial characters distinctive. Smaller, more slender in proportions than *P. c. auripectus* of southern Utah and northern Arizona, with shorter pelage and pinkish buff instead of cinnamon buff coloration.

Color.—Type: Upper parts rich pinkish buff, purest along sides and across lower part of rump, the back thinly lined with black; under parts and inner sides of limbs overlaid with white, the basal color plumbeous; ears scantily clothed with minute grayish hairs scarcely affecting the light brownish epidermis in tone; outer sides of forearms tinged with buff; feet whitish; tail sparsely haired, indistinctly light brownish above, especially toward tip, dull white below. *Young* (in first pelage): Light, ashy gray.

Skull.—Very similar in size to that of *P. c. stephensi*, but interpterygoid fossa broader; molar toothrows decidedly longer, the individual teeth larger. Compared with that of *P. c. auripectus* the skull is much smaller,

more delicate in structure, but interpterygoid fossa and dentition relatively about the same.

Measurements.—Type: Total length, 178 mm.; tail vertebrae, 105; hind foot, 19. Two adult female topotypes: 191, 174; 118, 105; 20, 19. *Skull* (type): Greatest length, 23.5; condylobasal length, 20.5; zygomatic breadth, 11.4; interorbital breadth, 4.2; length of nasals, 8.8; maxillary toothrow, 3.4.

Remarks.—Peromyscus c. disparilis, like the other subspecies of *Peromyscus crinitus,* is a rock-inhabiting animal not likely to occur on alluvial bottom lands. Its range is separated from that of *P. c. stephensi* by the valley of the Colorado River. While there is superficial resemblance to *stephensi* the dentition suggests closer relationship to the more robust, cinnamon buff subspecies, *P. c. auripectus.* It requires no close comparison with typical *crinitus* of Idaho, which is very dark, or with the extremely pallid form, *P. c. pallidissimus* recently described from an island in Gonzaga Bay, Lower California.

Specimens examined.—Total number, 6, as follows:

Arizona: Tinajas Altas (type locality), 5; Gila Mountains (8 miles north of Tinajas Altas), 1.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW MUSKRAT FROM ARIZONA.

BY E. A. GOLDMAN.

Since "A Systematic Synopsis of the Muskrats" by Hollister (North Amer. Fauna, No. 32, 47 pp., Apr. 29, 1911) was published collections have been made along the lower course of the Colorado River, which reveal the existence in that region of a geographic race unknown to the reviser of the group. Specimens have been taken at various localities, and as *Ondatra zibethica pallida* the animal has been recorded by Grinnell (Univ. Calif. Pub. Zool., vol. 12, no. 4, p. 238, Mar. 20, 1914) from Palo Verde and Pilot Knob, California. A fine series, however, of nineteen in winter pelage from four miles south of Gadsden, extreme southwestern Arizona, recently taken by Bernard Bailey has afforded the most satisfactory basis for comparison.

The new subspecies may be known as follows:

Ondatra zibethica bernardi, subsp. nov.

COLORADO RIVER MUSKRAT.

Type.—From four miles south of Gadsden, Yuma County, Arizona. No. 250454, ♂ adult, U. S. National Museum (Biological Survey collection, collected by Bernard Bailey, November 12, 1931. Original No. A4372; X catalogue No. 27010.

Distribution.—Lower Colorado River Valley in southwestern Arizona, southeastern California, northeastern Lower California, and doubtless northwestern Sonora.

General characters.—A rather small pale subspecies. Most closely allied to *Ondatra zibethica pallida,* of central Arizona, but less dusky, more cinnamon and therefore lighter in general coloration; face less blackish; rump near sides of tail without distinct light buffy patches usually present in *pallida;* cranial characters distinctive. Similar in color to *O. z. mergens* of Nevada, but decidedly smaller and differing in cranial details.

Color.—Type (fresh winter pelage): Upper parts nearly uniform cinnamon or rusty reddish, the back thinly lined or slightly obscured by darker overlying hairs; muzzle pale pinkish buff; middle of face from nose to level of eyes buffy grayish mixed with black; under parts in general overlaid with pale cinnamon, merging imperceptibly with color of sides, becoming pale pinkish buffy on throat, inner sides of limbs and inguinal region; a narrow, elongated brownish median spot on chin as usual in the group; feet clothed with the usual short brownish hairs and brownish or dull grayish fringing bristles; tail dark brownish.

Skull.—Similar in size to that of *O. z. pallida,* but nasals longer and narrower anteriorly; anterior border of outer wall of antorbital foramen more concave (more nearly straight in *pallida*); maxillary arm of zygoma less deeply notched at antorbital foramen as viewed from above; audital bullae small and angular and dentition about as in *pallida.* Compared with that of *O. z. mergens* the skull is much smaller, with upper outline rising higher across anterior roots of zygomata and rostrum more depressed anteriorly, as viewed from the side; anterior border of outer wall of antorbital foramen more concave; audital bullae relatively smaller, more angular.

Measurements.—Type: Total length, 485 mm.; tail vertebrae, 205; hind foot, 73. Average of five adult topotypes: 477 (465–492); 195 (187–205); 68 (66–70). *Skull* (type): Occipitonasal length, 56.4; condylobasal length 56.9; zygomatic breadth, 37.7; interorbital constriction, 6.1; nasals, length, 19.3, greatest width, 9.2; maxillary toothrow (alveoli), 13.7.

Remarks.—The characters distinguishing *Ondatra zibethica bernardi* from *O. z. pallida* are rather slight but quite constant as shown by the comparison of the material listed with over 30 topotypes and other typical specimens of *pallida.* The color differences noted in adults are also exhibited by very young individuals.

Specimens examined.—Total number, 29, as follows:

Arizona: Gadsden (type locality), 19; Colorado River (opposite Needles, Calif.), 1; Topock, 2.

California: Calipatria, 1; Colorado River (15 miles southwest of Ehrenberg, Ariz.), 4.

Lower California: Mexicali (5 miles southeast), 1; Volcano Lake (15 miles south), 1.

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PROCEEDINGS
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THREE NEW POCKET GOPHERS FROM NEW MEXICO AND ARIZONA.

BY E. RAYMOND HALL.

In a collection of mammals from Arizona and New Mexico donated to the Museum of Vertebrate Zoology by Miss Annie M. Alexander, and personally obtained and prepared by her and Miss Louise Kellogg during the summer of 1931, are three new races of pocket gophers, Family Geomyidae, representative of the genera *Thomomys* and *Geomys*.

The two forms of *Thomomys* here named as new come from parts of Arizona and New Mexico included within the range formerly assigned to *Thomomys fulvus fulvus*.

From this race, each of the two new forms is distinguished by longer auditory bullae, darker average color, and longer incisors which in *nasutus* are more procumbent. Also, in *nasutus* the rostrum is longer, and in *ruidosae* narrower than in *fulvus*. From *Thomomys fulvus grahamensis*, each of the two new forms may be distinguished by darker color, actually and relatively wider brain case and by the more nearly straight dorsal outline of the skull in longitudinal axis. Selected differences of each of the two new races in comparison with *Thomomys fulvus toltecus* are darker color, markedly lighter skull and smaller size. Outstanding differential characters as between the two new forms themselves are set forth in the diagnoses.

In two recent papers treating of the genus *Thomomys* (Goldman, Journ. Wash. Acad. Sci., vol. 21, no. 17, p. 417, and Hall, Univ. Calif. Publ. Zool., vol. 38, no. 4, p. 325) intergradation has been stated to exist between the *perpallidus* and the *fulvus* groups and between the *perpallidus* group and the *bottae*

group. Accordingly, I have employed the specific name *bottae*, since it is the oldest in the lot.

Color terminology is that of Ridgway's Color Standards and Color Nomenclature, 1912.

Thomomys bottae nasutus, new subspecies.

Type.—Female, adult, skin and skull; no. 50343, Mus. Vert. Zool.; west fork of Black River, 7550 feet altitude, Apache County, Arizona; June 14, 1931; collected by Annie M. Alexander; original no. 892.

Diagnosis.—Size: Medium (see measurements). Color (June-taken specimens): Fuscous above, sides and underparts lighter with wash of ochraceous-tawny on pectoral region; tail grayish; upper sides of toes whitish. Skull: Relatively broad; rostrum long, only slightly depressed distally and not constricted posteriorly; incisors long and strongly procumbent; nasals emarginate posteriorly; pterygoid space V-shaped; auditory bullae long and angular antero-laterally; brain case wide; zygomatic arches widely spreading.

Remarks.—The specimens from Blue which are referred to *nasutus* do not agree in all respects with those from the type locality of *nasutus*. However, the specimens from Blue are much nearer *nasutus* than they are to any other described form. Specimens available from Springerville, which lies only about twenty-five miles north of the type locality of *nasutus*, seem to be referable to *fulvus*.

Specimens examined.—Six from the type locality and five from Blue, 6000 feet, Greenlee County, Arizona.

Thomomys bottae ruidosae, new subspecies.

Type.—Female, adult, skin and skull; no. 50431, Mus. Vert. Zool.; Ruidoso, 6700 feet altitude, Lincoln County, New Mexico; September 30, 1931; collected by Louise Kellogg; original no. 1158.

Diagnosis.—Size: Medium (see measurements). Color (September-taken specimens): Fuscous to fuscous-black above; sides and underparts with strong wash of ochraceous-tawny; tail black except distal third which is white; feet and ankles white. Skull: Relatively broad; rostrum short and narrow, only slightly depressed distally and not constricted posteriorly; incisors of medium length and not strongly procumbent; nasals generally truncate posteriorly; pterygoid space V-shaped; auditory bullae of moderate size and angular antero-laterally; brain case relatively narrow; zygomatic arches widely spreading.

Remarks.—Thomomys bottae ruidosae is structurally more similar to *T. b. fulvus* than it is to *T. b. nasutus*. Though known to the writer only from specimens taken at the type locality, perusal of Bailey's (N. Amer. Fauna, no. 39, p. 81) account of *T. b. fulvus* leads one to suspect that specimens from other localities in south-central New Mexico also may be referable to *ruidosae*.

Specimens examined.—Eight from the type locality.

Geomys arenarius brevirostris, new subspecies.

Type.—Female, adult, skull and skin; no. 50460, Mus. Vert. Zool.; east edge of [white] sand [9 mi. W. Tularosa], Tularosa-Hot Springs Road, Otero County, New Mexico; October 10, 1931; collected by Annie M. Alexander; original no. 1174, A. M. A.

Range.—Known from three localities in the Tularosa Basin, Otero County, New Mexico.

Diagnosis.—Size small; coloration dark; rostrum and nasals short (see measurements); temporal ridges parallel or converging anteriorly.

Comparison.—As compared with a series of fifteen topotypes of *Geomys arenarius, G. a. brevirostris* averages smaller in every part measured, is slightly darker colored, and has a relatively shorter rostrum which is the most outstanding single differential character. Other cranial differences are as follows: Tympanic bullae more inflated, especially in mastoid portions; temporal ridges parallel or converging anteriorly rather than converging posteriorly; squamosal, just posterior to zygomatic arch, carried farther laterally toward external auditory meatus; interparietal actually and relatively (to length) broader; zygomatic arch more rounded anteriorly; jugal ending less bluntly in maxilla; interpterygoid space averaging wider.

Remarks.—The slightly darker color of *brevirostris* as compared with *arenarius* from the type locality is surprising in view of the fact that *brevirostris* lives in, and along the borders of, the white sand on which lives the nearly white *Perognathus gypsi.* Inasmuch as Merriam (N. Amer. Fauna, no. 8, 1895, p. 140) has recorded specimens of *G. arenarius* from Deming and Las Cruces, which are west of the Tularosa Basin, without comment as to any differential features in comparison with *arenarius* from El Paso, Texas, the type locality, it seems probable that *brevirostris* is limited to the Tularosa Basin, whereas typical *arenarius,* at least to the south and west, occurs in the Rio Grande drainage basin proper.

Specimens examined.—Total number 22, all from Otero County, New Mexico, as follows: Edge of White Sands, 9 miles west of Tularosa on Tularosa-Hot Springs Road, 14; White Sands, 10 miles southwest of Tularosa, 4100 feet, 7; White Sands, 12 miles west of Alamogordo, 4050 feet, 1.

MEASUREMENTS, IN MILLIMETERS, OF *Thomomys* AND *Geomys*

	Total length	Length of tail	Length of hind foot	Basilar length	Length of rostrum[1]	Length of nasals	Zygomatic breadth	Mastoid breadth	Least interorbital breadth	Alveolar length of upper molar series	Breadth of rostrum[2]
					Thomomys bottae nasutus, 3 ad. ♂♂ topotypes.						
Average	215	54	30.0	35.2	17.3	15.2	26.3	19.9	6.9	7.7	8.2
Maximum	219	58	31.0	35.9	18.0	15.8	26.5	20.4	7.3	7.9	8.7
Minimum	210	50	29.0	34.8	16.5	14.8	26.0	19.4	6.1	7.5	7.5
					Thomomys bottae nasutus, 3 ad. ♀♀ topotypes.						
Average	206	52	28.4	32.4	15.9	13.2	23.3	19.3	6.6	7.9	7.5
Maximum	207	56	29.0	32.6	16.2	13.8	23.6	19.6	6.8	8.1	7.6
Minimum	205	48	28.0	32.2	15.2	12.8	22.8	19.1	6.5	7.5	7.4
					Thomomys bottae ruidosae, 1 ♂ topotype.						
No. 50428	232	59	30.0	34.7	17.5	15.2	26.0	20.3	6.5	8.8	7.9
					Thomomys bottae ruidosae, 7 ad. ♀♀ topotypes.						
Average	204	60	28.8	31.2	14.8	12.6	22.2	17.8	6.3	7.9	7.2
Maximum	223	75	31.0	32.9	15.6	13.8	23.6	18.3	6.7	8.4	7.8
Minimum	192	49	27.0	30.6	14.2	11.4	21.2	16.9	6.1	7.6	6.9
					Geomys arenarius brevirostris, 7 ad. ♂♂						
Average	253	79	30.9	35.9	17.9	15.0	25.4	23.9	6.2	7.8	9.5
Maximum	261	84	32.0	36.8	19.0	16.1	27.1	24.9	6.2	8.0	10.0
Minimum	244	74	30.0	34.2	16.8	13.6	23.6	23.0	5.8	7.4	9.2
					Geomys arenarius arenarius, 3 ad. ♂♂ topotypes.						
Average	262	85	33.0	37.3	19.6	16.5	26.5	24.8	6.5	8.4	10.2
Maximum	280	95	34.0	38.4	20.4	17.2	27.3	25.9	6.7	8.8	10.6
Minimum	250	74	32.0	35.9	19.2	16.1	25.1	23.1	6.4	8.1	9.7
					Geomys arenarius brevirostris, 10 ad. ♀♀						
Average	233	69	29.3	32.4	15.8	13.0	23.3	22.2	6.2	7.4	9.0
Maximum	247	80	32.0	35.0	17.5	14.6	25.0	23.9	6.5	7.9	9.6
Minimum	221	58	27.0	30.3	14.9	11.8	21.8	20.8	6.0	6.8	8.6
					Geomys arenarius arenarius, 10 ad. ♀♀ topotypes.						
Average	243	74	31.5	35.3	18.1	15.4	24.9	23.3	6.5	7.9	9.7
Maximum	250	84	35.0	37.8	19.3	17.0	26.4	24.6	6.8	8.2	10.0
Minimum	225	63	29.0	32.3	16.4	13.9	24.0	22.5	6.1	7.1	9.3

[1]Length of rostrum as here given was taken from the middle of the anterior border of the nasals to the maxilla at the lateral end of the base of the lacrymal process.

[2]Breadth of rostrum as here given is, in *Geomys*, the greatest breadth of the rostrum, and in *Thomomys* it was taken where the maxillae and premaxillae meet on the sides of the rostrum.

—MUSEUM OF VERTEBRATE ZOOLOGY,
UNIVERSITY OF CALIFORNIA, BERKELEY.

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PROCEEDINGS
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NOTES ON THE TAXONOMY OF THREE ECONOMIC SPECIES OF MITES, INCLUDING THE DESCRIPTION OF A NEW SPECIES.

BY H. E. EWING,
United States Bureau of Entomology.

Notes are given in the following short paper on three economic species of mites. The proper scientific name for the tarsonemid mite attacking strawberries in America is discussed, record is made of an introduced mite pest of wheat, and a second mite species from the tracheae of grasshoppers is described.

Specific Identity of the American Tarsonemid Mite Attacking Strawberry.

Tarsonemid mites doing injury to strawberries have been referred to under three specific names

T. fragariae Zimm. (1905).
T. destructor Reuter (1906).
T. pallidus Banks (1899).

After Reuter had described *T. destructor* as a new species he changed his mind and regarded it as only a synonym of *T. fragariae* Zimm.

Massee (1930), Jour. Pomology and Horticultural Sci., vol. viii, No. 4, p. 305, stated that *T. pallidus* Banks is distinct. He compared Canadian specimens sent to him by W. A. Ross with European specimens of *T. fragariae*. He states: "The third joint of the fourth pair of legs of *T. fragariae* Zimm. bears two strong, stout fingers; a fine, short hair; and a very long bristle which is acuminate at apex. The third joint of the fourth pair of *T. pallidus* Banks possesses two short spines, which are very much weaker than those of *T. fragariae* Zimm. A short, clavate hair is present and also a very long thread-like hair."

Our American form should be known as *T. pallidus* Banks. Variations sufficient to justify a new species have not been found up to date.

An Introduced Eriophyid on Wheat.

On January 20, 1932, Professor H. C. Severin, of South Dakota State College, sent in for identification some Eriophyids on wheat plants that came from a greenhouse of the Agronomy Department of that school. The specimens were unusually long and agreed well with the published figures and descriptions of the European grain Eriophyid, *Eriophyes tenuis* (Nalepa). If this identification is correct it makes, as far as known, a new record of the introduction of an injurious species.

According to Professor Severin the mites were very injurious. He states: "The wheat was all destroyed by some mites. The mites have not only taken the wheat, but they are also going after some barley and are beginning to work upon some flax growing in the same house."

A Second Species of the Mite Genus Locustacarus.

The mite genus *Locustacarus* was established by the writer in 1924 for a species, *L. trachealis* Ewing, which has the peculiar habit of infesting the tracheae of grasshoppers. It was first discovered in 1914, but its interesting habits were not described until 1925, when Wehrle and Welch (An. Ent. Soc. Am., vol. XVIII, pp. 35–44) published their paper. Up until the present only one other mite species has been known habitually to infest the tracheae of an insect. This species is the well known *Acarapis woodi* (Rennie), which causes the serious disease of adult honeybees known as "Isle of Wight disease."

Recently B. P. Uvarov has sent to me for identification a second species of the genus *Locustacarus* which was collected from the air sacs of *Locusta migratorioides* in Africa by Mr. W. V. Harris. Its habits will be described in a forthcoming report by Mr. Harris. Here it is named and described, and a comparison is made between it and the previously known *Locustacarus tracealis*.

Locustacarus locustae, new species.

Nongravid female: Body stout, almost spherical. Capitulum about as long as broad, with several minute terminal or subterminal setae and a pair of long conspicuous dorsal setae. Chelicerae needlelike, somewhat looped at the base and in repose not quite reaching the tips of the first pair of legs. Cephalothorax covered above by a poorly sclerotized plate and bearing three pairs of dorso-lateral setae, the first pair being the shortest and the last pair the longest; the second pair is about equal to the cephalothorax in length. Abdomen short, reduced, with a large dorsal plate in front which is separated by transversely lined cuticle from a small, disclike, dorsal plate at the rear. Anterior dorsal plate of abdomen with a very large, conspicuous pair of setae at the posterior angles and a minute discal pair. Posterior dorsal plate of abdomen ending in a conspicuous tubercle that bears a pair of very long, submedian setae, equal in length to about one-half the width of the abdomen. In addition the posterior dorsal plate bears a pair of small setae near its anterior margin. Anterior pair of legs broad to their tips; tarsi each with a sessile pulvillus and degenerate claws and with sensory seta lateral and very close to posterior margin.

Second pair of legs tapering; tarsi each somewhat bifurcate distally with two clawlike processes, the inner being the stouter, and a large pedicellate terminal sucker. Posterior pair of legs similar to the second pair, except that the tarsi lack the clawlike processes.

Length of nongravid female, 0.19 mm.; width, 0.14 mm.

Type host.—A grasshopper, *Locusta migratorioides.*

Type locality.—Shinyanga, Tanganyika Territory, Africa.

Type slide.—U. S. N. M. No. 1049.

An abundance of material at hand consisting of eggs, newly hatched females, and females in various stages of engorgement. No males found. This species differs from *L. trachealis* Ewing in being stouter, having very definitely sclerotized dorsal plates, smaller claws, better developed pulvilli or suckers on the second and third legs, and in a number of less important details.

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PROCEEDINGS

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THE GENERIC NAME HAPLORNIS.

BY ALEXANDER WETMORE.

A number of years ago during work on a collection of birds from islands of the southern Pacific the writer observed that the generic name *Muscylva* Lesson,[1] in current use for the curious flycatcher of Fiji described originally by Gray[2] as *Rhipidura lessoni*, was involved in hopeless complication due to the fact that its original basis was composite and that it had had no type designation.

The details of this matter are discussed in full in the Bulletin of the Museum of Comparative Zoölogy, vol. 63, August, 1919, pages 201 to 203, and need not be repeated here. It is sufficient to say that in an endeavor to straighten out this nomenclatural tangle the writer designated the type of *Muscylva* Lesson as *Muscicapa caerulea* Brehm, there being no way open to save it for current use, which made *Muscylva* a synonym of *Hypothymis* Boie, and so eliminated it from further consideration. At the same time he set up the new name *Haplornis* to replace *Muscylva*, but through absorption in the involved discussion concerned with the status of the latter name neglected definitely to designate a type, so that *Haplornis*, cited simply as a new name, ranks as a synonym of *Muscylva*, and so must be placed with that name in the synonymy of *Hypothymis*.

Dr. Witmer Stone in reviewing this paper in the Auk (1920, p. 160) attempted to rectify this error by designating *Rhipidura lessoni* Gray as type of *Haplornis*, but this action is believed to have come too late to be valid.

It has long been my intention to give this question further attention, but various matters have prevented until now when

[1]Traité d' Ornith., 1831, p. 651.

[2]Gen. Birds, 1846, p. 258.

Dr. Ernst Mayr, engaged in study of the Pacific Island collections of the American Museum of Natural History, brings the matter again to attention with the request that I discuss it as he has need to treat the species concerned in a revision of the flycatchers of Polynesia.

There is proposed the genus

Mayrornis gen. nov.

Characters.—Generally similar to *Chasiempis* Cabanis,[3] but with rictal bristles less prominently developed; feet decidedly smaller, with anterior toes weaker; tarsus relatively shorter.

Type.—*Rhipidura lessoni* Gray, which becomes *Mayrornis lessoni* (Gray).

The genus is named in honor of Dr. Ernst Mayr in recognition of his work on the avifauna of the Pacific Islands.

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[3] *Chasiempis* Cabanis, Arch. für Naturg., 1847, p. 207, type, *Muscicapa sandwichensis* Latham.

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PROCEEDINGS

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A NEW MOUNTAIN LION FROM VANCOUVER ISLAND.

BY E. W. NELSON AND E. A. GOLDMAN.

Felix [sic] *oregonensis* was described by Rafinesque (Atlantic Journ., vol. 1, no. 2, p. 62, June 20, 1832), no definite locality being given, but indirect reference was made to "the western wilds of the Oregon mountains, or east or west of them." There seems to be no doubt that the describer referred to a mountain lion ranging in the region near the northwest coast of the United States, as pointed out by Stone (Science, n. s., vol. 9, p. 35, Jan. 6, 1899).

In connection with listing the recognizable subspecies of *Felis concolor* we made the following statement (Journ. Mamm., vol. 10, no. 4, p. 346, Nov. 11, 1929): "Our studies indicate that a widely distributed form to which Rafinesque's name is applicable occupies the coastal region from Vancouver Island, British Columbia, to southern Oregon, * * *." The accession of new material and subsequent study has convinced us that Vancouver Island should be excluded from the range of *Felis concolor oregonensis* as thus outlined. For greater precision it seems logical to restrict the name to the animal inhabiting the "Oregon Mountains," which may be interpreted as the Cascade Range of Oregon and Washington, states that in Rafinesque's time had not been segregated. Specimens from Mount Rainier National Park may be regarded as typical.

Vancouver Island is occupied by a distinctive form described as follows:

Felis concolor vancouverensis, subsp. nov.

VANCOUVER ISLAND MOUNTAIN LION.

Type.—From Campbell Lake, Vancouver Island, British Columbia. No. 211519, ♂ adult, skull only, U. S. National Museum (Biological

Survey collection), collected by W. R. Kent, September 13, 1915. X catalogue number 15040.

Distribution.—Known only from Vancouver Island.

General characters.—A very large dark form, closely allied to *Felis concolor oregonensis* of the adjacent mainland, but upper parts apparently more rufescent, and cranial characters, especially the more elevated frontal region, distinctive. Darker colored than *F. c. hippolestes*, of the Rocky Mountain region, and differing more widely in cranial details from it than from *oregonensis*.

Color.—An adult from Vancouver Island (No. 194247). Top of head, neck, and median dorsal area to base of tail near cinnamon rufous, moderately mixed with black on posterior part of back and rump; sides of body and outer surfaces of limbs cinnamon buffy, paling gradually to pinkish buff on feet; upper lips near sides of nose, lower part of cheeks, and chin nearly pure white; under side of neck suffused with pale pinkish buff; chest, inner surfaces of limbs and median line of abdomen dull white; upper surface of muzzle dark brownish; areas at base of vibrissae on sides of muzzle deep black; light supraorbital markings distinct; ears blackish externally without distinct median spots, whitish internally and narrowly edged with gray; hairs around pads on soles of feet blackish; tail above about like posterior part of back, becoming pinkish buffy below (tip missing).

Skull.—Size about as in *F. c. oregonensis* but frontals more arched anteriorly (more flattened in *oregonensis*), bulging prominently upward, or "humped," in front of postorbital processes; fronto-nasal pit (at posterior ends of nasals) deeper; nasals usually more convex in upper outline between anterior points of frontals, as viewed from side, owing to posterior depression in fronto-nasal pit, with a deeper median trough as viewed from rear; lambdoid crest usually less sinuate in outline, the lateral margins shelving more broadly and evenly outward from braincase; interpterygoid fossa narrow as in some specimens of *oregonensis* (*oregonensis* appears to be more variable in this character); lower border of mandible usually straighter (usually more curved downward near middle in *oregonensis*); dentition about the same. Similar in size to *F. c. hippolestes* also, but in more arched frontal region and expanded lambdoid crest contrasting still more strongly than with *oregonensis*; interpterygoid fossa narrower; space between canine and anterior large upper premolar (in front of and behind vestigial premolar) much reduced; but general dentition about the same.

Measurements (no external measurements available).—*Skull* (type): Greatest length, 215 mm.; zygomatic breadth, 146.4; interorbital constriction, 44.2; distance between ends of postorbital processes, 79.4; least width between outer walls of interpterygoid fossa, 27.8; alveolar length of upper canine-premolar series, 62.8; crown length of upper carnassial, 24.4.

Remarks.—While the mountain lion of Vancouver Island is closely related to that of the mainland comparable material now available shows that the differences pointed out are well marked, and in most individuals quite uniform and constant. In the steeply arched frontal region and depth of the fronto-nasal pit it presents an extreme in development in the

group. The unusual median indentation of the fronto-nasal region, the convexity of the posterior part of the nasals, and the highly arched frontal region give that part of the skull a distinctly more sinuous upper outline than in *F. c. oregonensis*. In *oregonensis* the skulls are more variable, the frontal region is rather arched, the fronto-nasal pit rather deep and the lambdoid crest rather widespreading in some specimens, but a distinctly nearer approach in cranial characters to the paler form, *F. c. hippolestes*, of the Rocky Mountain region, is exhibited. *F. c. vancouverensis* is the only insular form known.

Specimens examined.—Total number, 15, all from Vancouver Island, as follows: Buttle Lake, 1 (skull only); Campbell Lake (type locality), 3 (skulls only); Campbell River Valley, 1 (skull only); Nanoose Bay, 2[1]; Parksville, 1[1]; Quatsino, 1 (skull only); Quinsome Valley, 1 (skull only); within 20 miles of Victoria, 4 (skulls only); without definite locality, 1 (skin only).

[1]Specimens in Museum of Vertebrate Zoölogy.

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PROCEEDINGS
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A NEW MOTMOT FROM MEXICO.

BY ROBERT T. MOORE.

In describing an apparently new Motmot of the genus Momotus from Sonora, Mexico, I take great pleasure in naming it for my friend and associate Mr. Adriaan J. van Rossem. In his "Report on a Collection of Land Birds from Sonora, Mexico" (Trans. San Diego Soc. of Nat. Hist., Vol. VI, No. 19, p. 254), van Rossem called attention to two specimens of Motmot in the Dickey collection from Chinobampo, Sonora, exhibiting variation from *Momotus mexicanus mexicanus* Swainson. Although the differences were considerable, he hesitated to name a new race until it could be justified by further specimens. In a recent collection from Sonora which has come into my possession, ten more specimens of this race have appeared and are subject to so little variation among themselves, that they seem to justify their separation under a sub-specific name.

Momotus mexicanus vanrossemi, subsp. nov.

GREEN-TAILED MOTMOT.

Type.—Male adult, No. 7009, collection of Robert T. Moore; Chinobampo, Sonora, Mexico; Feb. 28, 1931; J. T. Wright, collector; original No. 5899.

Sub-specific characters.—Nearest to *Momotus mexicanus mexicanus* Swainson, but size smaller, back more yellowish-olive, tail above greener (pois green to dark greenish glaucous, Ridgway, 1912),[1] tips to "spatules" smaller and much grayer, chest and breast more ecru-olive, abdomen and under tail-coverts more buffy.

Geographical distribution.—Extreme southern Sonora, from Chinobampo to Guirocoba, San Rafael, San Francisco Canyon, and probably to contiguous portions of the same faunal area in Chihuahua and Sinoloa. Mr. van Rossem has described this as part of the Alamos faunal area.

Description of type.—Adult male in breeding plumage.—Type, No. 7009, Collection of Robert T. Moore; Chinobampo, Sonora, Mexico, Feb. 28, 1931. Pileum and hind-neck ochraceous-tawny passing into isabella color

[1]Names of colors in paper taken from Ridgway, Color Standards and Color Nomenclature, 1912.

on upper back and light yellowish olive on lower back; rump and upper tail-coverts between light grape green and corydalis green; wing-coverts and secondaries deep grape green, outer vane of primaries dark bluish glaucous, inner vane along shaft the same color, passing into gray on margin and tips; edge of wing ivory yellow tinged with glaucous; median rectrices pistachio green (deep greenish glaucous when viewed from the side), passing into light porcelain green on the anterior two-thirds of "spatules," the distal third occupied by dark grayish. The remaining rectrices are pistachio green, shafts of rectrices and primaries light seal brown; loral, orbital, and auricular regions black, the black beneath eye margined below by a patch of dull violet blue, the black of the auricular region margined above by light grayish violet blue; chin pale olive buff; base of feathers on throat cream buff, ends of feathers lime green to kildare green; chest lime green to chrysolite green; lower fore-neck with a median tuft of elongated black feathers about an inch and a quarter long, narrowly edged with pale bluish green; breast and upper abdomen deep lichen green; lower abdomen pale olive-buff in the center, cartridge buff on the sides; under tail-coverts cream buff; under wing-coverts tilleul buff, passing into vinaceous buff on inner webs of remiges; bill black, the mandible paler basally; legs and feet neutral gray.

Adult female in breeding plumage.—No. 7008, Collection of Robert T. Moore; San Francisco Canyon, Sinaloa, Mexico, Feb. 5, 1932; J. T. Wright. Very similar to the type of the adult male, but back, rump and upper tail-coverts more yellowish olive; tail much shorter, and lighter (more glaucous); throat, chest and breast more yellowish citrine; lower abdomen and under tail-coverts more buffy (cream buff).

The new race differs from typical *Momotus mexicanus mexicanus* in its shorter wing and exposed culmen; pale green tail instead of bluish green; green anterior portion of the "spatules" of the median tail feathers instead of blue; smaller and grayer tips to the spatules; more yellowish olive back; paler pileum; more yellowish olive throat, chest and breast as compared with the more bluish green of *mexicanus;* buffy whitish abdomen as compared with the greenish buff of *mexicanus;* buffy edge of wing; more olive wing-coverts and secondaries. Comparisons have been made with eight specimens in the Dickey collection of *Momotus mexicanus mexicanus* from Oaxaca to Sinaloa, including the *mexicanus saturatus* described by Nelson, but questioned by Bangs and Peters—Bull. Mus. C. Z. LXVIII, No. 8. These eight specimens were selected from a large series of *mexicanus* to represent the extremes both in size and color. The twelve specimens of the new race are quite uniform and markedly different in size and color from the eight specimens of *mexicanus.*

In the table below I incorporate measurements of specimens of *M. mexicanus* from Sinaloa, geographically the nearest specimens Ridgway measured (Birds of N. & M. Amer., Part VI, p. 464). For further measurements see Ridgway's table, covering 56 specimens. It will be noted that the males of *vanrossemi* have a shorter wing and a shorter exposed culmen than any of the male specimens of the other races of *mexicanus* in the Dickey collection or of those listed by Ridgway. This seems to apply to individual as well as average measurements of *vanrossemi,* since there is not much variation.

Locality.	Aver. Wing.	Extremes of Wing Meas.	Aver. Tail.	Extremes of Tail Meas.	Aver. Exposed Culmen	Extremes of Culmen Meas.
MALES.						
Six adult males, Sonora (*vanrossemi*)	110.3	(109.1–112.2)	159.7	(152.7–166.9)	32.9[2]	(32.2–33.1)
Five adult males, Sinaloa (*mexicanus* Ridg.)	116.3		160.5		38.2	
Two adult males, Colima (*mexicanus*, Dickey col.)	115.6	(115.5–115.6)	175.3	(169.1–181.4)	36.1	(33.3–38.9)
One adult male, Oaxaca (*m. saturatus?* Dickey col.)	126.7		187.8		42.2	
Three adult males, Oaxaca[3] (*m. saturatus?* Dickey col.)	120.		180.6		40.5	
FEMALES.						
Six adult females, Sonora (*vanrossemi*)	110.2	(108.4–112.5)	153.8[4]	(148–160.5)	32.8	(30.8–35.7)
Six adult females, Sinaloa (*mexicanus* Ridg.)	110.7		153.5		37.7	
One adult female, Tepic (*mexicanus*, Dickey col.)	114.5				36.6	
Three adult females, Colima (*mexicanus*, Dickey col.)	115.8[5]	(113.4–118.1)	164.6	(151.6–173.1)	33.1	(32.4–36.6)
Two adult females, Oaxaca[3] (*m. saturatus?* Dickey col.)	123.		182.		40.2	

[2]Average of four, two bills injured.
[3]From measurements in notes of Mr. van Rossem
[4]Measurement of five tails, one injured.
[5]Average of two. One wing distorted.

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OF THE

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NEW RACES OF A SKINK (SIAPHOS) AND FROG (XENOPUS) FROM THE UGANDA PROTECTORATE.

BY ARTHUR LOVERIDGE.

Recently, while engaged in the identification of some herpetological material collected in Uganda for the Field Museum of Natural History by Mr. Edmund Heller, I came across two races so well differentiated from the typical forms that they merit description.

Perhaps the smooth-clawed frog should be regarded as a full species but it appears to be connected with the typical form by *Xenopus laevis victorianus* Ahl (1924, Zool. Anz. Leipzig, *60*, p. 270) which was based on a single specimen. In 1925 I advanced reasons for regarding *victorianus* as a synonym of *laevis*, but having collected a series in Lake Victoria recently I think that the form may be recognized, though not on the structural characters suggested by its author.

Siaphos meleagris helleri, subsp. nov.

Type.—Field Museum of Natural History, No. 12,749, an adult ♀, from Bugongo Ridge, 9,500 feet, Mt. Ruwenzori, Uganda, collected by Edmund Heller in 1925.

Diagnosis.—Differs from the typical form from the Mubuku Valley, 7,000 feet, Mt. Ruwenzori, Uganda, in the following characters. Nostril in an undivided nasal; prefrontals well developed instead of minute; eight instead of five supraciliaries as given in both figure and description of *meleagris;* nine instead of twelve lamellae under the second and third toes (normally the third and fourth); back spotted with black instead of with white.

Description.—Body much elongate, limbs small, with four fingers and four toes; the distance between the end of the snout and the fore limb contained two and a third times in the distance between the axilla and groin. Snout very short, obtuse; lower eyelid scaly; nostril pierced in a

single nasal; no supranasal; frontonasal broader than long, its suture with the rostral three times as long as its suture with the frontal; prefrontals well developed; frontal as long as the frontoparietals in contact with the first and second supraoculars; 8 supraciliaries; frontoparietals distinct, larger than the interparietal; parietals forming a suture behind the interparietal; a pair of nuchals; fourth upper labial below the centre of the eye; ear-opening minute, about as large as the nostril; 22 smooth scales around the middle of the body; median preanals scarcely enlarged. The length of the hind limb equals the distance between the anterior border of the eye and the fore limb; second and third toes (normally the third and fourth, the hallux being absent) almost equal, with 9 lamellae inferiorly. Tail long and thick.

Coloration.—Above, pale chestnut spotted with black, these spots coalescing anteriorly to form four longitudinal lines on the nape, an irregular black streak from nostril through the eye to above the fore limb where it breaks up into spots; limbs spotted with black. Below, throat and belly immaculate white, tail heavily spotted with black, on the sides of the tail the spots form streaks.

Measurements.—Total length		162 mm.
	Length of head	8 mm.
	Width of head	5 mm.
	Length of body	54 mm.
	Length of fore limb	9 mm.
	Length of hind limb	12 mm.
	Length of tail	100 mm.

In 1924 Dr. J. C. Phillips brought back some sun-dried frogs from Kissalo Market; their condition was such that they could not be used for taxonomic studies. Three years later Dr. J. Bequaert procured two apparently similar frogs from Lake Bunyoni; at the time Dr. T. Barbour and I agreed that these probably represented a new form, but assuming that they were immature, decided to let them wait the assembling of more material. Recently, however, I had occasion to dissect one of these frogs and was surprised to find it fully adult, though so small. This new race may be called

Xenopus laevis bunyoniensis, subsp. nov.

Xenopus laevis Loveridge (part), 1925, Proc. Zool. Soc. London, p. 766 (Kissalo Market record). Barbour & Loveridge, 1930, in Strong, "African Republic of Liberia and the Belgian Congo," *2*, p. 791 (Lake Bunyoni record).

Type.—Museum of Comparative Zoology, No. 14,616. An adult ♀ from Bufundi on western shore of Lake Bunyoni, Kigezi district, Southwestern Uganda, collected by Dr. Joseph Bequaert on April 5th, 1927.

Paratypes.—One hundred and seventy-three specimens, *viz.:* Museum of Comparative Zoology Nos. 10,288–10,292 from Kissalo Market (possibly these frogs came from Lake Chahafi, which is nearer Kissalo than is Lake

Bunyoni) purchased by Dr. J. C. Phillips, April 9th, 1924. Museum of Comparative Zoology No. 14,617 with same data as type. American Museum of Natural History Nos. 40,375–40,432 with same data as type but collected by Dr. J. P. Chapin. Field Museum of Natural History Nos. 12,177–12,181, being ninety-nine specimens collected in Lake Bunyoni by Mr. Edmund Heller in 1925.

Diagnosis.—Distinguished from the typical form by its smaller size, breeding from 35 mm., maximum length of one hundred and seventy-four specimens 53 mm. (also a ♀; F. M. N. H. No. 12,177) as against 84 mm. in *X. l. laevis;* narrower habit, the greatest width at midbody being equal to, or only a trifle broader than, the greatest width of the head (as against 1½ to 1⅔ in *X. l. laevis*); the black claws are slender and conical (instead of broad and flattened); ventral surface flecked and spotted with black. Only three specimens have immaculate thighs and belly, a rather higher percentage have the belly, or a part of it, unspotted.

Measurements.—Type ♀. Length of head and body 35 mm., breadth of head 12 mm., breadth of body 12 mm., length of head to angle of jaw 7 mm., length of snout from front of eye 4 mm., length of hind limb from anus 45 mm., length of fourth toe 14 mm.

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A NEW SUCKING LOUSE FROM THE CHIMPANZEE.

BY H. E. EWING,

United States Bureau of Entomology.

This short note includes a description of a new subgenus of the genus *Pediculus* Linnaeus and a new species of that genus which is made the type of the proposed new subgenus. The genus *Pediculus* occurs, as far as known up to the present, on the different races of man, certain of the apes, and the spider monkeys. The species here described is the tenth of the genus to come from a host other than man.

Paenipediculus, new subgenus.

This subgenus has the characters of *Pediculus* except for the following: First pair of legs distinctly longer than the others. Cephalothorax decidedly squarish in shape and poorly sclerotized. Abdomen slender; first three pairs of pleural plates absent; fourth pair protruding, but poorly sclerotized except immediately surrounding the spiracle.

Type species.—Pediculus (Paenipediculus) simiae, new species.

This subgenus is decidedly different from the subgenus *Parapediculus* Ewing (Proc. U. S. Nat. Mus., Vol. 68, Art 19, 1926, p. 7) in all of the characters here given except for the protruding nature of the fourth pleural plates.

Pediculus (Paenipediculus) simiae, new species.

Head rather slender for the genus. Eyes distinct, conspicuous, each with a strongly curved cornea and a jet black pigment spot. Antenna about equal to the head in length; first segment the broadest, as broad as long; second segment the longest, slightly longer than third; third slightly longer than fourth; fourth slightly longer than fifth, which is the narrowest segment of all.

Cephalothorax fully as broad as long, decidedly squarish in shape; anterior margin strongly incurved. Cephalothoracic spiracles in their usual position, but small, inconspicuous. Legs rather slender; first pair decidedly longer than the others. Femur of first pair strongly arched near

the base; tibia slightly longer than the femur and with the usual spur-bearing tibial thumb; tarsus somewhat weaker than in other species of the genus, with a decidedly reduced tarsal pad.

Abdomen long, slender, the most distinctive part of the species; devoid of setae except for a few near the tip. Pleural plates one, two, and three absent, but spiracles present in the abdominal segments these plates should occupy. Fourth pair of pleural plates protruding, with a heavy sclerotized ring about the spiracles; fifth pair of pleural plates protruding, tubercle-like, with spiracles, sclerotized ring scarcely evident; sixth pair low, rounded, with spiracles.

Length of egg-bearing female, 2.95 mm.; width (just in front of first pair of pleural plates), 0.70 mm.

Type host.—Chimpanzee, *Pan.* sp.

Type locality.—Taken from host in London Zoological Gardens.

Type (Holotype).—U. S. N. M. No. 44327.

Description based on one egg-bearing female. Two other specimens, both immature, at hand. They show the general characteristics of the adult to a marked degree, but have smaller bodies in proportion to the legs. All material was taken from a young chimpanzee in the London Zoological Gardens, and sent to the writer by Dr. V. B. Wigglesworth of the London School of Hygiene and Tropical Medicine.

Fahrenholz (1910) has described a *Pediculus* species (*P. schäffi*) from a chimpanzee, but his species is, according to his description, as long as *Pediculus capitis* and somewhat broader in the abdomen. He also states that the head, as well as the antennae and legs, is longer than in *P. capitis*. *Pediculus schäffi* is in fact decidedly of the typical form of the genus. The present species is of a type entirely different from that of any species previously described. In its slender body and in the absence of some of the pleural plates it resembles *Pedicinus* species; yet its large size, the nature of the antennae, the shape of the head and the tarsal armature of the legs show clearly that it is a *Pediculus*. Since the specimens came from an animal in a zoological garden, there is little assurance that the chimpanzee is their natural host. The species is of a type, however, not found on monkeys or lemurs.

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LATERALLUS GRAY ANTEDATES CRECISCUS CABANIS.

BY JAMES L. PETERS.

In the last part of volume 4 of the Journal für Ornithologie Jean Cabanis proposed the genus Creciscus with *Rallus jamaicensis* Gmelin as its monotypic type. His new genus did not find universal favor among the ornithologists of his day; apparently it was considered too close to Porzana to merit recognition. However, when R. Bowdler Sharpe wrote up the Rallidae for the twenty-third volume of the Catalogue of Birds in the British Museum in 1894, he revived Cabanis' name of Creciscus for a group of twelve species of rails found in North, Central and South America and the Galápagos Archipelago. Sharpe's generic synonymy (omitting names proposed by Heine in 1890 on grounds of purism) is:

Creciscus Cabanis J. f. O. p. 428 (1856) Type *C. jamaicensis.*
Rufirallus Bp. C. R. xliii, p. 599 (1856) Type *C. cayennensis.*
Laterirallus Bp. C R. xliii, p. 599 (1856) Type *C. melanophaeus.*

Sharpe himself was opposed to Bonaparte's names arbitrarily compounded with no regard for either euphemy or classical usage, so it is easy to see why he should have selected Cabanis' Creciscus from among the three names all ostensibly published in 1856. Anyway, Creciscus came into general use from 1894 onwards and after that it was so much easier to copy Sharpe than to go back of 1894 and ferret out the facts.

It now appears that Creciscus was not published in 1856, but in 1857. In the early days of the J. f. O. the parts were numbered consecutively from Jahrgang to Jahrgang, no. 24, which included pp. 417–506, being the last part of the volume for 1856. It was supposed to have appeared in November, but

a published letter from a correspondent, dated 16 Feb. 1857, shows that part 24 must have made its appearance some time after that date.

This would seem to dispose of Creciscus and open up the way for the employment of either Rufirallus or Laterirallus, since the weekly parts of the Comptes Rendues in which those names were published appeared on schedule so far as known. There is, however, a still earlier name, Laterallus G. R. Gray. The history of this name is as follows. Bonaparte published one of his numerous "Conspecti" in Ann. Sci. Nat., Zool., ser 6, **1**, 1854, p. 105–152. On p. 150 he lists the genera of Rallidae and under genus 2012 Hypotaenidia Reich. he proposes subgenus d, Laterallus Bp. This name is an absolute nomen nudem at this appearance, having no included species and no diagnosis, but was validated by G. R. Gray, Cat. Gen. and Subgen. Bds. 1855, p. 120, who, though he credited the name to "Pr. B.", designated *Rallus melanophaia* Vieillot as the type of the genus. Laterallus appears to have been lost sight of, though it is listed as of Bonaparte 1854 in Waterhouse Index Generum Avium 1889 and Richmond mentions it in his third "List of Generic Terms of Birds," 1917, p. 571.

Just how Gray discovered what species Bonaparte intended to include in his genus is not clear but he must have had some inkling through Bonaparte himself, for in the Compt. Rend. **43**, 1856, p. 599, Bonaparte lists the species under the genera Rufirallus and Laterirallus (*sic*), the latter no doubt an emendation of Laterallus, and there the first species under Laterirallus is *Gallinula albifrons* Swainson, which is a synonym of *Rallus melanophaius* Vieillot.

As long as *Rallus jamaicensis* Gmelin and *Rallus melanophaius* Vieillot are kept in the same genus, the proper generic name for the group is Laterallus Gray.

In concluding I would add that Rails as a whole present a problem to any one with a tendency to lump genera. An ancient and widely distributed group, each species shows certain external structural characters that seem to be of more than specific value, yet if these characters are to be considered of generic worth we are faced with a multiplicity of monotypic genera that will completely obscure the close relationships that appear to exist between a great many species.

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TWO NEW MAMMALS FROM HONDURAS.

BY E. A. GOLDMAN.

Mr. C. F. Underwood, whose name has been linked for many years with natural history, especially the ornithology of Costa Rica, is now engaged in making collections in the interior of Honduras. Among mammals recently obtained by him are specimens of a *Baiomys*, and of a cottontail rabbit of the *Sylvilagus floridanus* group. Neither of these seems previously to have been recorded from Honduras, although the rabbit is known from Nicaragua. Both are southern representatives of groups reaching the United States.

They appear to warrant subspecific recognition, and are described as follows:

Baiomys musculus grisescens, subsp. nov.

HONDURAS BAIOMYS.

Type.—From Comayabuela, just south of Tegucigalpa, Honduras (altitude 3,100 feet). No. 257083, ♀ adult, U. S. National Museum, collected by C. F. Underwood, March 6, 1932. Original No. 838.

Distribution.—Known only from south-central Honduras.

General characters.—A slightly differentiated, grayish brown form, with a broad skull. Closely allied to *Baiomys musculus nigrescens* of Chiapas, but upper parts paler, owing to a grayish suffusion, and under parts more pinkish buff (pure white pectoral areas present in some specimens); skull broader. Not very unlike *B. m. musculus* of Colima, but upper parts darker in general tone, with a more distinct grayish suffusion; skull slightly different.

Color.—Type: Upper parts finely mixed vinaceous buff and dusky, with a grayish plumbeous suffusion, producing a grayish brown general tone, the dusky element due to fine black tips of hairs restricted mainly to top of head and back; cheeks, shoulders, and flanks lighter, more pinkish buffy; under parts overlaid with pinkish buff, the plumbeous basal color showing through; outer surfaces of forearms and thighs grayish plumbeous; feet dull whitish; ears dusky; tail nearly unicolor, dark brownish above, slightly

paler below. In several topotypes the pectoral region is marked by white areas, varying from a narrow median line to broad patches extending more than half way across under parts.

Skull.—Very similar to that of *B. m. nigrescens*, but braincase and interorbital region broader; zygomata more strongly bowed outward, near middle, the sides, therefore, less nearly parallel. Differing from that of *B. m. musculus* mainly in more widely spreading zygomata.

Measurements.—Type: Total length, 101 mm.; tail vertebrae, 44; hind foot, 15. Average of four adult topotypes: 104 (94–118); 45 (42–50); 14.5 (14–15). *Skull* (type): Occipitonasal length, 20; condylobasal length, 18; zygomatic breadth, 11; interorbital constriction, 4; length of nasals, 7.2; maxillary toothrow, 3.2.

Remarks.—The discovery of a *Baiomys* in Honduras materially extends the known range of the genus southward. In localities where mice of this group occur they are usually abundant and readily trapped. No specimens appear to have been taken by collectors in Nicaragua, and this suggests that the material upon which the present form is based may be from near the southern limit of the genus.

Specimens examined.—Eight, all from Honduras, as follows: Comayabuela (type locality), 7; Monte Redondo, 1.

Sylvilagus floridanus hondurensis, subsp. nov.

HONDURAS COTTONTAIL.

Type.—From Monte Redondo, about 30 miles northwest of Tegucigalpa, Honduras (altitude about 5,100 feet). No. 257062, ♂ adult, U. S. National Museum, collected by C. F. Underwood, December 3, 1931. Original No. 628.

Distribution.—South-central Honduras to northern Nicaragua.

General characters.—Size medium; ears short; pelage short; dorsum dark and contrasting with grayish sides of head and flanks; top of head and upper surface of tail near tip blackish. Similar to *Sylvilagus floridanus chiapensis* of Chiapas, but ears shorter; pelage shorter; sides of head and body grayer; pectoral and abdominal areas purer white (more or less suffused with buff in *chiapensis*); skull narrower. About like *S. f. aztecus* of the western side of the Isthmus of Tehuantepec in general size, but ears shorter and color distinctly darker, the upper parts suffused with a more tawny tone, and top of head and back more heavily overlaid with black; tail blacker above near tip. Smaller, with relatively shorter ears, than *S. f. yucatanicus* of Yucatan; color above darker, with a richer, more tawny suffusion, and top of head, back, and tail blacker; skull less massive.

Color.—Winter pelage: Top of head and back light tawny, heavily overlaid with black; nape clear cinnamon rufous; sides of body buffy grayish, becoming clearer gray on sides of head, base of ears, and on sides of rump; light tawny of back extending downward across flanks in narrow areas in front of thighs (a marking shared with many other rabbits); throat, inner surfaces of limbs, pectoral region, median abdominal and inguinal areas white; sides of abdomen and under surface of neck cinnamon buffy;

ears gray, mixed with black externally, becoming nearly pure black along antero-external margins near tips, thinly clothed internally with grayish hairs; outer surfaces of forearms tawny, paling gradually to pinkish buff on fore feet; outer surfaces of thighs tawny, shading to dull white on terminal half of metatarsus and toes; tail above buff, mixed with black, becoming nearly pure black toward tip, below pure white.

Skull.—Rather narrow and of slender proportions. Very similar in general to that of *S. f. aztecus*, but jugal slightly less extended vertically, and audital bullae slightly larger than usual in that form. Similar to those of *S. f. chiapensis* and *S. f. yucatanicus*, but narrower, less massive; jugal more slender; audital bullae about as in *chiapensis*, smaller than in *yucatanicus*.

Measurements.—Type: Total length, 428 mm.; tail vertebrae, 41; hind foot, 87; ear from notch (dry skin), 54.3. Two adult topotypes: 434, 415; 42, 37; 58, 54. *Skull* (type): Occipitonasal length, 74.5; condylobasal length, 65.8; zygomatic breadth (anteriorly), 35; interorbital breadth, 19.4; length of nasals, 34.3; maxillary toothrow (alveoli), 13.5.

Remarks.—When Nelson revised the rabbits of North America (North Amer. Fauna, No. 29, Aug. 31, 1909) no cottontails from Honduras were available for study. Several specimens from neighboring territory in northern Nicaragua were, however, referred to *S. f. chiapensis* (op. cit., p. 190) with comment as follows: "In color they are perfectly typical *chiapensis*, but are smaller, with shorter ears and hind feet. The skull is smaller than typical *chiapensis*, with proportionately wider interorbital breadth and larger bullae. However, these differences do not appear to be sufficiently marked to be worth more than passing notice * * *." These specimens had already been assigned by J. A. Allen (Bull. Amer. Mus. Nat. Hist., vol. 24, p. 649, Oct. 13, 1908) to the same form, but he remarked that "the dorsal surface is apparently more heavily washed with black than in *chiapensis*." Some differences as compared with more northern specimens had, therefore, been noted by two previous authors. The additional material from Honduras warrants the recognition of a more southern form of *Sylvilagus floridanus*, with characters as here set forth.

Specimens examined.—Total number, 5, as follows: Honduras: Monte Redondo (type locality), 4; Nicaragua: Jinotega, 1.

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DESCRIPTIONS OF TWO NEW HARVEST MICE FROM HONDURAS.

BY ARTHUR H. HOWELL.

In a small collection of mammals recently acquired by the United States National Museum from Honduras there are three specimens of *Reithrodontomys*, representing two apparently undescribed forms. These have been submitted to me for identification and are herewith described.

Reithrodontomys mexicanus lucifrons, subsp. nov.

Type.—Female adult, skin and skull, No. 257086, United States National Museum; collected at Cerro Cantoral, Honduras, February 7, 1932, by C. F. Underwood; original number, 709.

Subspecific characters.—Similar in size and cranial characters to *mexicanus;* hind foot smaller; coloration distinctly paler, especially on the forehead and sides of face. Compared with *goldmani:* coloration of body similar, but face paler; skull shorter with more globular braincase.

Description of type.—Forehead and sides of face cinnamon-buff; eye-ring black; dorsal area, from crown to rump, sayal brown, varied with fuscous; sides pale sayal brown; ears fuscous; feet dull white, with a median stripe of hair-brown; underparts pale pinkish cinnamon; tail fuscous, unicolor.

Measurements.—Type: Head and body, 68 mm.; tail vertebrae, 112; hind foot, 19; ear from notch (dry), 13.2. Topotype (female): 70; 114; 18; 13. Skull (type): Greatest length, 23.7; breadth of braincase, 11.7; length of nasals, 8.5; width of outer wall of antorbital foramen, 1.7.

Remarks.—The two specimens on which this race is based agree closely in color, except that the topotype has the underparts whitish instead of buffy. The new form is clearly related to *R. mexicanus mexicanus*, which is known to range from Vera Cruz, Mexico, south to Guatemala. No members of this genus have previously been described from Honduras.

Reithrodontomys mexicanus minusculus, subsp. nov.

Type.—Male adult, skin and skull, No. 257087, United States National Museum; collected at Comayabuela (just south of Tegucigalpa), Honduras, February 27, 1932, by C. F. Underwood; original number, 797.

Subspecific characters.—Similar in color and cranial characters to *R. mexicanus lucifrons* (described above), but decidedly smaller; upper parts slightly paler, except on the head, which is similar to the back.

Description of type.—Head and upper parts sayal brown, varied with fuscous; sides pale sayal brown; ears fuscous; eye-ring black; feet dull white, with a median stripe of hair-brown; tail fuscous, unicolor; underparts white, faintly washed with pale pinkish cinnamon.

Measurements.—Type: Head and body, 69 mm.; tail vertebrae, 102; hind foot (dry), 18.5; ear from notch (dry), 11. Skull: Greatest length, 21.4; breadth of braincase, 11.1; length of nasals, 7.5; width of outer wall of antorbital foramen, 1.5.

Remarks.—The single specimen of this form at hand is clearly referable to the *mexicanus* group, and doubtless will prove to be a subspecies, nearest related to *lucifrons*. Although resembling the latter closely in color, its distinctly smaller size indicates that it represents a separate race.

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PROCEEDINGS

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A NEW RACE OF PEROGNATHUS LONGIMEMBRIS FROM SOUTHERN CALIFORNIA.

BY JACK C. VON BLOEKER, JR.

On November 22, 1922, Mr. Luther E. Wyman secured a specimen of *Perognathus longimembris* at Hyperion, Los Angeles County, California. It was preserved as an alcoholic specimen in the Los Angeles Museum and, during the following years, became temporarily forgotten. After the "rediscovery" of *Perognathus pacificus* and the subsequent addition to the knowledge of the extent of its range by the author and others, Mr. George Willett, of the Los Angeles Museum, suggested that the old Wyman specimen be looked up and, if possible, identified. The specimen was found and made into a study skin, but was too discolored from its long immersion in denatured alcohol to be of much use. It was decided, therefore, that an attempt should be made to secure additional specimens. Intermittent trapping at Hyperion and other localities along the coast in Los Angeles County from August to November, 1931, and during April and May, 1932, enabled the writer to secure over a hundred specimens of the pocket mouse in question. Study of these specimens has revealed that they represent an hitherto unrecognized race of *Perognathus longimembris*, which intergrades with *Perognathus pacificus* Mearns, thus reducing the latter to the status of a race of *Perognathus longimembris*. Mr. Seth B. Benson, of the Museum of Vertebrate Zoology, who has also studied the same material, agrees with the writer in this opinion.

I take pleasure in naming this form in honor of Mr. George G. Cantwell who long has aided and encouraged me in my scientific studies.

Perognathus longimembris cantwelli, subsp. nov.

CANTWELL POCKET MOUSE.

Type.—Female adult, skin and skull, no. 1378, collection of Jack C. von Bloeker, Jr., from Hyperion, Los Angeles County, California, collected by Jack C. von Bloeker, Jr., September 5, 1931.

Distribution.—In so far as is known, sand-covered mesas and sandy washes in the vicinity of the sea-coast in Los Angeles County, California.

Diagnosis.—A small, long-tailed, moderately dark-colored pocket mouse of the *longimembris* group with the belly hairs entirely white, or occasionally with plumbeous bases and buffy tips; upper surface of hind feet whitish; lower surface of tail light pinkish cinnamon; skull short and narrow, with slender rostrum and small mastoid bullae.

Comparisons.—Compared with *Perognathus longimembris pacificus,* similar in size of body; tail actually and relatively longer; hind foot larger; color averages lighter dorsally; light pinkish cinnamon colored lateral stripe averages broader. Skull relatively narrower; rostrum more slender; mastoids smaller; angular median projection from posterior margin of frontals not extending as far between the parietals (in most specimens of *pacificus* this projection is strongly developed). Compared with *Perognathus longimembris brevinasus,* body smaller; tail actually and relatively longer; color averages darker dorsally, with more prominent and darker lateral stripe. Skull actually and relatively smaller throughout, with smaller mastoids and more slender rostrum.

Color (using color terms from Ridgway's *Color Standards and Color Nomenclature,* 1912).—Type: Dorsal hairs with terminal portions black, subterminal bands light ochraceous buff, brightening to light pinkish cinnamon on the lateral stripes; basal portions of dorsal hairs slate gray. Hairs of breast and upper surface of feet white; hairs of belly slate gray basally and tipped with light pinkish cinnamon. Hairs of tail light pinkish cinnamon except on dorsal surface where black hairs form a narrow stripe, broadest at terminal portion of tail. Hairs at base of vibrissae black.

There is considerable seasonal variation in color, specimens taken in the spring being more reddish and with the dusky less intense. More than half the specimens collected have entirely white belly hairs.

Measurements (in millimeters).—Average of ten sub-adults, eight males and two females, paratypes: Total length, 131.6 (125.0–136.0); tail, 71.7 (65.0–78.0); head and body, 59.9 (58.0–63.0); hind foot, 17.9 (17.0–18.0); ear, from crown, 6.6 (6.0–7.0). Skull: Occipito-nasal length, 19.64 (18.9–20.3); fronto-nasal length, 13.11 (12.7–13.7); greatest mastoid breadth, 10.76 (10.3–11.2); length of mastoid, 7.23 (6.8–7.6); distance between stylomastoid foramina, 9.57 (9.3–9.9); least interorbital breadth, 4.79 (4.5–5.0).

Specimens examined.—Specimens, unless otherwise indicated, are in the writer's collection. Total number examined, two hundred and twenty, all from California, as follows:

Perognathus longimembris cantwelli, 112; Los Angeles County; Palisades del Rey, 3; Hyperion (type locality), 103;[1] Clifton, 3; Wilmington, 3.[2]

Perognathus longimembris brevinasus, 27; San Bernardino County; Cajon Wash (type locality), 10;[3] North of Etiwanda, 1;[3] Reche Canyon, near Colton, 2;[2] Los Angeles County; San Fernando, 5;[4] Riverside County; Reche Canyon, 1;[5] Vallevista, 8.[2]

Perognathus longimembris pacificus, 81; Orange County; San Juan Capistrano Point (Dana Point), 10;[3] San Diego County; San Onofre, 1; two miles east of San Onofre, 1; Santa Margarita River, four miles northwest of Oceanside, 14;[6] Oceanside, 6;[2] two miles north of Monument No. 258, United States-Mexico Boundary (type locality), 49.[7]

Remarks.—The race *P. l. cantwelli* occupies the area between the ranges of *P. l. brevinasus* and *P. l. pacificus*. It intergrades with both of these forms, showing that the latter is a race of *P. longimembris*. Specimens from San Fernando, Los Angeles County, here referred to *brevinasus* on the basis of skull characters and size, approach *cantwelli* in color. Similarly, specimens from San Juan Capistrano Point, Orange County, here referred to *pacificus*, approach *cantwelli* in skull characters but maintain the external characters of *pacificus*.

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[1]Eleven in Los Angeles Museum.
[2]Museum of Vertebrate Zoology.
[3]Los Angeles Museum.
[4]One in Museum of Vertebrate Zoology.
[5]Collection of Frank Stephens.
[6]Eight in Los Angeles Museum.
[7]Five in Museum of Vertebrate Zoology, Seventeen in Los Angeles Museum.

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PROCEEDINGS

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THREE NEW MAMMALS FROM SALT MARSH AREAS IN SOUTHERN CALIFORNIA.

BY JACK C. VON BLOEKER, JR.

Investigations recently carried on by Mr. George G. Cantwell and the writer in the salt marsh at Playa del Rey, Los Angeles County, California, have revealed the existence of three previously unnamed races of mammals, a shrew, a harvest mouse and a meadow mouse, herewith described. In order to gain further knowledge of the distribution of these new forms, the writer visited the salt marshes at Anaheim Bay, Orange County, and Point Mugu, Ventura County, during May, 1932.

For the loan of comparative material, the writer wishes to express his thanks to Dr. Joseph Grinnell and Mr. Seth B. Benson, of the Museum of Vertebrate Zoology, Berkeley, California, to Dr. Wm. H. Burt, of the California Institute of Technology, Pasadena, California, to Mr. Bernard Bailey, of Escondido, California, and to Mr. Kenneth E. Stager, of Los Angeles, California. To Messrs. George Willett and George G. Cantwell, of the Los Angeles Museum, Los Angeles, California, the writer wishes to express his appreciation of the many helpful suggestions and criticisms received from them, whereby, it is hoped, errors in this paper may be reduced to a minimum. Color terms used in the following descriptions are from Ridgway's *Color Standards and Color Nomenclature*, 1912.

Sorex ornatus salicornicus, subsp. nov.

SOUTHERN MARSH SHREW.

Type.—Male adult, skin and skull, no. 1680, collection of Jack C. von Bloeker, Jr., from Playa del Rey, Los Angeles County, California, collected by Jack C. von Bloeker, Jr., March 13, 1932.

Distribution.—In so far as is known, coastal marshes in Los Angeles and

Ventura counties, California; from Nigger Slough, Los Angeles County, to Point Mugu, Ventura County.

Diagnosis.—A small, dark-colored shrew of the *ornatus* group, with the belly hairs slate color basally and tipped with pale smoke gray; tail bicolor, bone brown above and on ventral tip, remaining ventral portion drab gray; skull short, and small throughout.

Comparisons.—Compared with *Sorex ornatus ornatus*, averages smaller in body size; tail shorter; color of dorsal and ventral pelage averages much darker. Skull actually and relatively smaller throughout, with more flattened brain-case. Compared with *Sorex ornatus californicus*, about equal in external measurements, color averages slightly darker. Skull actually and relatively smaller. Compared with *Sorex ornatus relictus*, equal in external measurements, color averages slightly lighter. Skull actually and relatively shorter and narrower, with much lower brain-case. Compared with *Sorex sinuosus*, smaller throughout and lighter colored.

Color.—Type (in winter pelage): Dorsal hairs with terminal portions black, subterminal bands olive brown, basal portions blackish slate. Ventral hairs slate color basally and tipped with smoke gray. Tail with dorsal surface and ventral tip bone brown, rest of ventral surface of tail and upper surface of feet drab gray. Hairs at base of vibrissae and on nose black.

In summer pelage the dorsal hairs are colored with bister subterminally and the ventral hairs are tipped with drab gray.

Measurements (in millimeters).—Average of ten adults (5 males and 5 females), including the type: Total length, 96.2 (85.0–102.0); tail, 36.45 (29.5–42.0); head and body, 59.75 (50.0–64.0); hind foot, 11.55 (10.5–12.0); ear, from crown, 4.0 (3.0–5.0). Skull: Condylobasal length, 15.71 (15.4–16.0); palatal length, 6.12 (5.9–6.4); cranial breadth, 7.65 (7.4–7.9); greatest height of cranium, 4.37 (4.2–4.6); interorbital breadth, 3.26 (3.1–3.4); maxillary breadth, 4.53 (4.5–4.6); maxillary tooth row, 5.71 (5.5–5.9).

Specimens examined.—Specimens, unless otherwise indicated, are in the writer's collection. Total number examined, thirty-nine, all from California, as follows:

Sorex ornatus ornatus, 12; Kern County; San Emigdio Creek (type locality), 2;[1] Mount Pinos, 1;[1] Fort Tejon, 1;[1] Bakersfield (approaching *relictus*), 2;[1] Piute Mountains, 2;[2] Inyo County; Little Lake, 1;[1] Fresno County; Minkler, 2;[1] Mariposa County; Dudley, 1.[1]

Sorex ornatus californicus, 10; Contra Costa County; Walnut Creek (type locality), 1;[1] Alameda County; Berkeley, 6;[1] Haywards, 3.[1]

Sorex ornatus relictus, 2; Kern County; Buena Vista Lake (type focality), 2.[1]

Sorex ornatus salicornicus, 10; Los Angeles County; Playa del Rey (type locality), 8;[3] Nigger Slough, 1; Ventura County; Point Mugu, 1.[2]

Sorex sinuosus, 5; Solano County; Grizzly Island (type locality), 5.[1]

[1]Museum of Vertebrate Zoology.

[2]Los Angeles Museum.

[3]Two in Los Angeles Museum, one in collection of Donald R. Dickey.

Remarks.—Systematically the race *S. o. salicornicus* occupies a position intermediate in color and external characters between *S. o. californicus* and *S. o. relictus*, retaining, in majority, skull characters of smaller dimensions than any previously named form of the *Sorex ornatus* group.

Reithrodontomys megalotis limicola, subsp. nov.

SOUTHERN MARSH HARVEST MOUSE.

Type.—Female adult, skin and skull, no. 2991, Los Angeles Museum, from Playa del Rey, Los Angeles County, California, collected by George G. Cantwell, January 30, 1932.

Distribution.—In so far as is known, coastal marshes in Orange, Los Angeles, and Ventura counties, California; from Anaheim Bay, Orange County, to Point Mugu, Ventura County.

Diagnosis.—A medium-sized, dark-colored harvest mouse of the *megalotis* group, with the belly hairs slate color basally with short white tips, giving the underparts a bluish gray cast; tail distinctly bicolor, black above and white below; skull short and narrow, with slender rostrum and small mastoid bullae.

Comparisons.—Compared with *Reithrodontomys megalotis longicauda*, about equal in total length, head and body length relatively shorter, and tail relatively longer; color averages darker dorsally, grayish tinge not being as prominent. Skull actually and relatively smaller throughout; zygomas not as sharply curved downwards.

Color.—Type: Dorsal hairs with terminal portions black, narrow subterminal bands pale yellow orange, basal portions plumbeous black. Hairs of underparts blackish plumbeous basally and tipped with white. A small spot of pale yellow orange tipped hairs is present on the chest. Upper surface of feet and lower surface of tail very thinly covered with entirely white hairs; hairs on dorsal surface of tail black. A spot of black hairs is present on each side at base of vibrissae.

Measurements.—Average of eight adults (3 males and 5 females), including the type and seven paratypes: Total length, 142.0 (134.0–148.0); tail, 78.0 (70.0–88.0); head and body, 64.0 (60.0–66.0); hind foot, 17.0 (16.0–18.0); ear, from crown, 13.5 (13.0–14.0). Skull: Occipito-nasal length, 20.2 (19.8–20.5); width of cranium, 9.86 (9.5–10.0); zygomatic width, at center of zygomas, 9.55 (9.3–9.8); least interorbital breadth, 3.17 (3.0–3.4); upper molar series, 2.98 (2.9–3.1).

Specimens examined.—Total number examined, two hundred and two, all from California, as follows:

Reithrodontomys raviventris raviventris, 40; San Mateo County; Redwood City (type locality), "salt marsh," 4;[4] Santa Clara County; Palo Alto, 4;[4] Alameda County; Melrose Marsh, 32.[5]

Reithrodontomys raviventris halicoetes, 22; Sonoma County; Petaluma (type locality), "salt marsh," 16;[4] Solano County; Cordelia, 6.[4]

Reithrodontomys megalotis longicauda, 63; Sonoma County; Petaluma

[4]Museum of Vertebrate Zoology.

[5]Thirteen in Museum of Vertebrate Zoology.

(type locality), "foothills," 2;[4] ALAMEDA COUNTY; Oakland, 1; SAN MATEO COUNTY; Redwood City, "foothills," 9;[4] SOLANO COUNTY; Vacaville, 3 miles west, 8;[4] Rumsey, 6;[4] SANTA CLARA COUNTY; Black Mountain, 1;[4] Palo Alto, 3;[4] MONTEREY COUNTY; Jolon, 1;[6] Moss Landing, 2; Salinas, 3 miles west, 1;[6] SANTA CRUZ COUNTY; Granite Creek, 2; KERN COUNTY; Mount Pinos, 7;[7] LOS ANGELES COUNTY; Sawtelle, 4;[8] Arcadia, 1; Big Santa Anita Canyon, San Gabriel Mountains, 2; Alhambra, 1;[6] San Antonio Canyon, San Gabriel Mountains, 2;[6] Arroyo Seco, San Gabriel Mountains, 2;[6] Rancho La Brea, 2;[6] SAN DIEGO COUNTY; Alvarado Canyon, 1; Monument no. 258, United States-Mexico Boundary, 12.

Reithrodontomys megalotis limicola, 77; LOS ANGELES COUNTY; Playa del Rey (type locality), "salt marsh," 46;[9] Gardena, Nigger Slough, 5; Hyperion, 2; ORANGE COUNTY; Anaheim Bay, 8;[6] VENTURA COUNTY; Point Mugu, 16.[6]

Remarks.—In so far as is known, the race *R. m. limicola* is confined strictly to marshland areas; usually coastal salt marshes where *Salicornia* is present in abundance. An exception, of course, is the five specimens from the Gardena section of Nigger Slough, Los Angeles County, here referred to *limicola*. Previous to the draining of Nigger Slough there was an abundance of *Salicornia* present throughout the area, the water was more or less brackish, and the area was typically a "salt marsh."

Microtus californicus stephensi, subsp. nov.

STEPHENS MEADOW MOUSE.

Type.—Female adult, skin and skull, no. 1519, Los Angeles Museum, from Playa del Rey, Los Angeles County, California, collected by George G. Cantwell, March 3, 1930.

Distribution.—In so far as is known, coastal marshes in Orange, Los Angeles, and Ventura counties, California; from Sunset Beach, Orange County, to Point Mugu, Ventura County.

Diagnosis.—A medium-sized, very dark-colored meadow mouse of the *californicus* group, with the ventral hairs blackish plumbeous basally and tipped with cinereous; tail distinctly bicolor, black above and cinereous below; skull long and narrow, with relatively narrow rostrum.

Comparisons.—Compared with *Microtus californicus californicus*, total length shorter, head and body length relatively longer, and tail actually and relatively shorter; hind foot larger; color averages much darker throughout. Skull, longer and narrower, upper molar series shorter. Compared with *Microtus californicus sanctidiegi*, smaller in external measurements and color averages much darker throughout. Skull averages longer and narrower, upper molar series shorter.

Color.—Type: Dorsal hairs with terminal portions black, narrow subterminal bands warm buff, basal portions plumbeous black. Ventral hairs

[6]Los Angeles Museum.
[7]Three in Los Angeles Museum.
[8]One in Los Angeles Museum.
[9]Sixteen in Los Angeles Museum.

blackish plumbeous basally and tipped with cinereous. Upper and lower lips lined with totally white hairs. A spot of totally white hairs is present in the region of the vent. Vibrissae blackish basally with long cinereous tips. Hairs of upper surface of tail black; hairs of lower surface of tail and upper surface of feet cinereous. The general effect in appearance of the dorsal coloration is black, with slight pepper-and-salt pattern.

There is considerable individual variation in darkness of dorsal coloration in *stephensi;* specimens showing a color range, in effect of, from brown to black have been examined. The type was selected as intermediate between the two extremes.

Measurements.—Average of ten adults (7 males and 3 females), including the type and nine paratypes: Total length, 170.4 (160.0–180.0); tail, 49.1 (44.0–60.0); head and body, 123.3 (117.0–128.0); hind foot, 22.1 (20.0–23.0); ear, from crown, 13.5 (13.0–14.0). Skull: Occipito-nasal length, 27.49 (26.9–28.1); height of cranium at bullae, 10.32 (10.0–10.6); mastoid width, 12.82 (12.4–13.3); zygomatic width, 16.07 (15.1–16.6); least interorbital breadth, 3.52 (3.3–3.7); upper molar series, 6.91 (6.6–7.2).

Specimens examined.—Total number examined, one hundred and seventy-seven, all from California, as follows:

Microtus californicus californicus, 24; Santa Clara County; Palo Alto (type locality), 6;[10] Alameda County; Piedmont, 6;[10] Elmhurst, 1;[10] Melrose Marsh (not typical), 10;[11] Monterey County; Moss Landing, 1.

Microtus californicus sanctidiegi, 41; San Diego County; Escondido (type locality), 9;[12] Chula Vista, 3;[10] Cuyamaca Mountains, 4;[10] Foster, 6 miles north, 6;[10] Alvarado Canyon, 2; Point Loma, 2; Monument no. 258, United States-Mexico Boundary, 1; Los Angeles County; Sawtelle, 2; San Antonio Canyon, San Gabriel Mountains, 2;[13] Camp Baldy, San Gabriel Mountains, 1;[13] Bear Flat, San Gabriel Mountains, 1.[13]

Microtus californicus stephensi, 112; Los Angeles County; Playa del Rey (type locality), 46;[14] Orange County; Sunset Beach, 2;[15] Anaheim Bay, 37;[13] Ventura County; Point Mugu, 27.[13]

Remarks.—Geographically the race *M. c. stephensi* occupies the area along the coast between the ranges of *M. c. californicus* and *M. c. sanctidiegi*, being confined, in so far as is known, to salt marsh areas. It intergrades with the latter form as shown by specimens from Sunset Beach, Orange County, here referred to *stephensi* on the basis of skull characters.

This race is named in honor of Mr. Frank Stephens, of San Diego, Californa.

All of the races here named are characterized in common by dark coloration. Similarly specimens of *Peromyscus* and *Mus* from these salt marshes show this same tendency but, in the case of the former, insufficient material at hand and, in the case of the latter, lack of comparative material being

[10] Museum of Vertebrate Zoology.

[11] Nine in Museum of Vertebrate Zoology.

[12] Two in Museum of Vertebrate Zoology, seven in collection of Bernard Bailey.

[13] Los Angeles Museum.

[14] Twenty-three in Los Angeles Museum.

[15] One in Los Angeles Museum, one in collection of Kenneth E. Stager.

available, restrains the writer from naming these forms. When the necessary material has been gathered together and differences compared, they, also, may merit racial recognition.

As pointed out by Dr. Joseph Grinnell (1913, p. 194), there seems to exist a direct relationship between salt marsh inhabitation and quantity of pigmentation. However, in apparent contradiction to this theory, it is also shown that the *blackest* forms known occur in areas where the marshes are least salt (loc. cit.), or, in the case of a recently described shrew (Grinnell, 1932), where *no* salt is in evidence! It is the present writer's belief that salt, in itself, is not the prime factor in this co-relationship between darkly colored, marsh dwelling forms and the areas in which they exist. Observations made in the several salt marshes from which specimens were taken for the present study reveal that, without exception, the soil in each marsh is of a decidedly black nature, caused by stagnation of decaying plant and animal life. Recently the writer visited the Melrose Marsh, in the San Francisco Bay region, making similar investigations which revealed the same soil characterization. It is known, to a certain extent, that coloration is affected by the nature and type of country in which a species or race may exist. Animals living in other types of country show direct relationship between the color and nature of the soil in which they live and the amount of pigmentation. For instance, in New Mexico certain lava field inhabiting mammals show great amount of pigmentation while those inhabiting white sand show lack of pigmentation. Is it not reasonable, therefore, to believe that, in a similar way, the color and nature of the soil in the marshes is truly the primary factor of the co-relationship between dark coloration and palustrine habit?

Laboratory experiments in tanning mammal hides with varying proportions of salt in the solutions show marked tendencies towards changing the coloration of brown or yellow hairs to reddish. The more salt added, the more pronounced the change. Is it not possible that salt in the marshes has a similar effect upon the coloration of the pelage? Most small mammals of restricted range, not distinctly marsh dwellers, show a large degree of brown coloration in the subterminal bands of the dorsal hairs. Near related forms living in salt marshes show an increased reddishness in this coloration. In the marshes around the south arm of San Francisco Bay, where the salt is in greatest proportion, are found the reddest forms. In the Suisun Bay area, where the marsh is least salt, are found the blackest forms wherein no reddish tendency exists. This is due, according to the present theory, to the lessening in degree of the amount of salt in the marsh. In the marshes under consideration in Southern California a half-way parallel in amount, or degree, of salt is presented, the mammals being intermediate in coloration between the two extremes in the marshes in west-central California.

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PROCEEDINGS

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A NEW WEASEL FROM PANAMA.

BY E. RAYMOND HALL.

In a study of American weasels several previously unrecognized races are found which require naming and description. One of these is here characterized, in a preliminary fashion—in advance of publication of the results of the uncompleted general study—in deference to the wishes of Mr. Gerritt S. Miller, Jr. (to whom I am indebted for the loan of many indispensable specimens) who has asked me now to place on record any new forms which require selection of the type-specimens from the collection of the United States National Museum, and thus permit of a greater degree of completion in his forthcoming list of type specimens in the National collection. Accordingly, I have extracted from my manuscript selected lines of the account of the Panama weasel, which will fulfill the requirements above indicated.

Mustela frenata panamensis, new subspecies.

Type.—Female, subadult, skull and skin; no. 170970, U. S. Nat. Mus., Biol. Surv. Coll.; Rio Indio, Canal Zone, near Gatun, Panama; February 17, 1911; collected by E. A. Goldman; original no. 20897.

Range.—Sea level (type locality) to 5800 feet (Boquete, see Bangs [Mus. Comp. Zool., **39**, 51, 1902]); Upper and Lower Tropical zones of Panama.

Diagnosis.—Differs from both *M. f. meridana* and *M. f. costaricensis* in darker tone (tone 4 of pl. 344 of Oberthür and Dauthenay, Répertoire de couleurs . . . , 1905) of color of upper parts and in convex dorsal outline of skull.

Size.—Male: Two adults, nos. 10112 and 10113, Mus. Comp. Zool., measure respectively, as follows: total length, 480 and 400; length of tail, 170 and 143; length of hind foot, 52 and 43. Female (type specimen): total length, 408; length of tail, 159; length of hind foot, 46.5.

Remarks.—*Mustela frenata panamensis* is one of the two darkest colored

weasels; *M. f. aureoventris* Gray is the other. Also, *M. f. panamensis* has the dorsal face of the skull more convex in longitudinal axis than any other weasel. That this race previously has not been named probably is accounted for by the fact that specimens from Panama were supposed to represent *Mustela affinis* Gray until 1916, when Allen (Bull. Amer. Mus. Nat. Hist., vol. 35, p. 100, 1916) restricted the type locality of *M. affinis* to Bogota, Colombia. At that time Allen referred specimens from Panama to *Mustela affinis costaricensis*, and Goldman (Smithsonian Miscellaneous Collections, vol. 69, no. 5, p. 161, 1920) followed Allen in this.

Specimens examined.—Total number, 7, all from Panama, as follows: Boquete, 5; Rio Indio, near Gatun, 1; Mount Pirre, 1.

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A NEW LAPHAMIA FROM CALIFORNIA.

BY S. F. BLAKE.

During the years 1931–32, Dr. Frederick V. Coville, of the United States Department of Agriculture, has made three botanical collecting trips to Death Valley, California, a locality in which he collected extensively 40 years ago.[1] His Asteraceae, identified by the writer, include the new Laphamia described below and also three species previously known only from Nevada, one of which represents a genus new to California. As all these species are rare, it seems worth while to present the records for them in connection with the description of the Laphamia.

CHRYSOTHAMNUS GRAMINEUS H. M. Hall, Muhlenbergia **2**; 342. 1916.

This extremely distinct species, hitherto known only from the type locality,—head of Lee Canyon, Charleston Mountains, Clark County, Nevada, altitude 2450 meters (*Heller* 11075),—was collected in Death Valley Canyon, Panamint Mountains, California, at altitudes of 2225 to 2315 meters, 21 Sept. 1931, by F. V. Coville and A. F. Gilman (nos. 83, 88).

APLOPAPPUS BRICKELLIOIDES Blake, Proc. Biol. Soc. Wash. **35**: 173. 1922.

This was collected in a side canyon off Furnace Creek Canyon, about 5 miles from Furnace Creek Springs, Funeral Mountains, Inyo County, California, 24 April 1931, by F. V. Coville and M. French Gilman (no. 184). The type collection (*Purpus* 6022), the only one previously known, was labeled "rocks, Ash Meadows, Sheep Mount, Nevada, alt. 3–4000 ft." As Hall[2] has pointed out, Ash Meadows is on the California-Nevada line east of Death Valley, and the Sheep Mountains about 100 km. northeast of this in Clark County, Nevada. The exact locality of the original collection is consequently uncertain.

HECASTOCLEIS SHOCKLEYI A. Gray, Proc. Amer. Acad. **17**: 221. 1882.

This monotype has been known only from a few collections from Esmer-

[1] F. V. Coville, "Botany of the Death Valley Expedition," Contr. U. S. Nat. Herb. vol. 4, 1893.

[2] The Genus Haplopappus 84. 1928.

alda County, Nevada. It was collected in hills north of Leadfield, Grapevine Mountains, Inyo County, California, 25 April 1932, by F. V. Coville and M. French Gilman (no. 435).

Laphamia villosa Blake, sp. nov.

Suffruticulosa multicaulis ramosa 1–2.3 dm. alta, caule dense patenti-villoso; folia infima opposita reliqua alterna petiolata pro genera tenuia ovata saepius integra obtusa majora 7–9 mm. longa, interdum hastato-trilobata, superiora sensim reducta; capitula discoidea 5–7.5 mm. alta ca. 24-flora pedunculata in apicibus ramorum saepius solitaria; involucri ca. 4 mm. alti phyllaria oblonga acuta villosa et ciliata; corollae flavae vel rubescentes; achenia 2-marginata dense et minute hispidula eciliata epapposa.

Stems erectish or lax and curved, densely villous with lax spreading many-celled hairs about 0.6 mm. long and somewhat glandular; petioles of larger leaves slender, 2-6 mm. long, pubescent like the stem; larger blades broadly ovate, 7–9 mm. long, 4.5–7 mm. wide, obtuse, broadly rounded at base, rather thin, light green, triplinerved and slightly veiny, villous and dotted with sessile glands, sometimes hastately 3-lobed; heads mostly solitary at tips of stem and branches, the peduncles mostly 7–22 mm. long; involucre 2-seriate, equal, 3.5–4.5 mm. high, the phyllaries about 13, oblong or ovate-oblong, the outer somewhat thickened and ribbed along midline; corollas bright yellow or turning reddish, 4-toothed, 3.5–3.8 mm. long (tube 1–1.4 mm., densely stipitate-glandular, throat subcylindric, 1.8–2 mm., sparsely stipitate-glandular on the nerves, teeth deltoid-ovate, acutish, 0.5 mm. long, glandular and sometimes sparsely pilose dorsally); achenes blackish with thickened whitish margins, narrowly oblong, 3 mm. long, 0.7 mm. wide; style branches with subulate-acuminate hispidulous appendages.

California: In shaded rock crevices, middle fork of Hanaupah Canyon, Panamint Mountains, Inyo Co., altitude 2090 m., 22 Sept. 1931, *F. V. Coville & A. F. Gilman* 108 (type no. 1,531,290, U. S. Nat. Herb.), 109.

Laphamia villosa is a member of the group generically separated by Rydberg (N. Amer. Fl. **34**: 19. 1914) under the name *Monothrix* Torr., and is distinguished by its loosely villous stems, rather thin and usually ovate and entire leaves, and lack of pappus. In all the previously known forms of this group, with the exception of *L. palmeri* and its var. *tenella*, the stems are merely scabrous-puberulent, finely hispidulous, or almost granular-pulverulent. In *Laphamia palmeri* A. Gray the stems, although described by Rydberg in the same words (scabrous-puberulent) as the other species of the genus, are better described as short-hirsute or short-villous; and in *L. palmeri* var. *tenella* Jones, synonymized by Rydberg with *L. palmeri*, they are villous with lax spreading hairs up to about 0.8 mm. long. On the basis of the two collections examined, including the type collection, var. *tenella* appears to merit varietal distinction.

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THE JAGUARS OF NORTH AMERICA.

BY E. A. GOLDMAN.

The first available name for a jaguar is [*Felis*] *onca* Linné, which was assigned to a "*Habitat in* America *meridionali.*" The type locality has been more definitely fixed by Thomas (Proc. Zool. Soc. London, March, 1911, p. 136) as Pernambuco, Brazil. Several jaguars have been described from South America and the warm southern parts of North America, under various specific names. The material now available affords a fairly clear concept of the range of individual variation in these animals. Study and general comparisons of 47 skulls and a smaller number of skins, including the types of *Felis notialis* Hollister from Argentina, *Felis paraguensis* Hollister from Paraguay, *Felis centralis* Mearns from Costa Rica, and *Felis hernandesii goldmani* Mearns from Campeche, reveal close agreement in all of the more essential characters. The general form of the skull, the arrangement of its component parts, and the dental sculpture are very similar, regardless of locality. The differential features, on the other hand, are relatively slight and indicate such near relationships that complete intergradation of all of the described forms of the jaguar can scarcely be doubted. It may be noted in this connection that True in his "Provisional List of the Mammals of North and Central America and the West India Islands" (Proc. U. S. Nat. Mus., Vol. 7, p. 610, 1884 [1885]), included *Felis onca* Linné, to which he ascribed a range from "Louisiana to Patagonia."

The ground color and the size and arrangement of spots exhibit wide individual variation in the jaguars and appear to provide no reliable subspecific characters, but differences in size and cranial proportions serve as

indices to geographic races. North American forms that seem clearly assignable subspecifically to *Felis onca* are as follows:

Felis onca centralis Mearns.....Talamanca, Costa Rica.
Felis onca goldmani Mearns.....Yohaltun, Campeche, Mexico.
Felis onca hernandesii (Gray).....Mazatlan, Sinaloa, Mexico.
Felis onca arizonensis, subsp. nov.....Cibecue, Arizona.

The hitherto unrecognized form from Arizona may be known by the following description:

Felis onca arizonensis, subsp. nov.

ARIZONA JAGUAR.

Type.—From near Cibecue, Navajo County, Arizona. No. 244507, male adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by Jack Funk, April 12, 1924. X catalogue No. 23633.

Distribution.—Mountainous parts of southeastern Arizona, northeastern Sonora, southern New Mexico, and possibly southern Texas; limits of range undetermined.

General characters.—A large northern subspecies, distinguished from all the other geographic races of *Felis onca* by the flattened or depressed nasals. Similar in size and general features to *Felis onca onca* of eastern Brazil, but separable by cranial details, such as the more pointed lambdoid crest and more flattened nasals. Most closely allied to *Felis onca hernandesii* of the west coast of central Mexico; general colors and markings much the same, but skull characters, especially the more flattened nasals, distinctive. Differing from *Felis onca goldmani* of Campeche notably in much larger size and more coarsely spotted pelage, as well as details of cranial structure. Larger than *Felis onca centralis* of Costa Rica, and departing from it in about the same skull characters as from *hernandesii*.

Color.—Type: Ground color of upper parts light ochraceous tawny, nearly uniform from top of head to base of tail, becoming gradually paler and near cinnamon buff on cheeks, sides of neck, lower part of flanks and outer surfaces of limbs; body in general heavily spotted with black, the arrangement of the markings within the range of variation usual in the group; dorsum, except median line on posterior part of back, marked by irregularly circular spots, tending to enclose smaller spots or forming rosettes; on posterior part of back and proximal half of tail elongated black spots becoming confluent form an irregular or somewhat ragged stripe along median line; under parts and inner surfaces of limbs white, heavily spotted with black; upper surface of muzzle cinnamon buff, unspotted; ears deep black, with small buffy median spots; tail with crowded black markings, separated by narrow cinnamon buffy interspaces, becoming white near tip. A skin from Greaterville, Arizona, is similar in general tone, but black spots are not confluent along median line on posterior part of back. In another from the same locality the ground color is light ochraceous buff, the black spots in general reduced in size, but coalescing to form a stripe on the median line of rump as in the type.

Skull.—General dimensions and contour much as in *F. o. onca*, but

nasals much flatter, more depressed anteriorly, thus reducing the height of the nasal opening as compared with *onca;* lambdoid crest usually less evenly rounded in outline, more tapering to the median point of union with sagittal crest, and shelving less widely outward from braincase; interpterygoid fossa opening more narrowly, the lateral margins usually more strongly turned inward; audital bullae usually smaller, less distended; dentition usually lighter; upper carnassials and third upper premolars notably smaller, as a rule; vestigial upper premolars set in wider interspaces between canines and third upper premolars. Most closely resembling that of *F. o. hernandesii*, but rostrum broader; nasals much flatter, more depressed anteriorly; anterior nares wider, but not as high; interpterygoid fossa opening more narrowly, the lateral margins usually more strongly turned inward; dentition about the same. Compared with that of *F. o. goldmani* the skull is much larger, more angular and elongated, the sagittal and lambdoid crests more prominent; nasals flatter, more depressed anteriorly; anterior nares relatively as well as actually wider, but relatively not as high; interpterygoid fossa usually narrower, more elongated; audital bullae less inflated. Differing from *F. o. centralis* in larger size and in about the same structural details as from *hernandesii*.

Measurements.—Type (tanned skin): Total length, 2,145 mm.; tail vertebrae, 660; hind foot, 230. *Skull* (type): Greatest length, 273; condylobasal length, 237.5; zygomatic breadth, 187; width of rostrum (at constriction behind canines), 74.5; interorbital constriction, 51; distance between tips of postorbital processes, 76.3; width across mastoid processes, 111.5; greatest width of nasals (anteriorly), 44.8; width of interpterygoid fossa (between inner edges of opening at palato-pterygoid suture), 20; length of canine-premolar series (alveoli), 81; length of upper carnassial (crown), 28; width of upper carnassial (crown), 14.7; diameter of upper canine (alveolus), 20.4. Skull of an adult female from Greaterville, Arizona: Greatest length, 217; condylobasal length, 193.5; zygomatic breadth, 155; width of rostrum (at constriction behind canines), 64.3; interorbital constriction, 44.3; distance between tips of postorbital processes, 68.4; width across mastoid processes, 96; greatest width of nasals (anteriorly), 37.8; width of interpterygoid fossa (between inner edges of opening at palato-pterygoid suture), 21; length of canine-premolar series (alveoli), 67.9; length of upper carnassial (crown), 25.3; width of upper carnassial (crown), 13; diameter of upper canine (alveolus), 16.7.

Remarks.—Multiplying records at different seasons indicate that the present form of jaguar, while never very abundant, is a regular resident in southeastern Arizona. It represents the extreme northern limit of the range of *F. onca*, and is a rather well-marked race as shown by comparison with its nearest geographic neighbor, *F. o. hernandesii* of the Pacific Coast of central Mexico. The specimens upon which this new jaguar is based were obtained largely through the active interest of Mr. M. E. Musgrave, who had long service in charge of predatory-animal control activities of the Biological Survey, U. S. Department of Agriculture, in Arizona.

Specimens examined.—Four, all from Arizona, as follows: Cibecue (type locality), 1; Greaterville, 2; Nogales (20 miles west), 1.

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GENERAL NOTES.

NEW NAMES FOR MAMMALS PROPOSED BY BOROWSKI IN 1780 AND 1781.

The first and second volumes of "Gemeinnüzzige Naturgeschichte des Thierreichs," published at Berlin and Stralsund in 1780 and 1781, respectively, by Georg Heinrich Borowski, contain a number of mammalian names entitled to recognition which have been overlooked by taxonomists. The first volume of this work consists of four parts and the second volume of two parts, each of these parts being separately paged. Authorities are cited for the names used and references to other sources of information are likewise given. In the following instances, Borowski's names have priority over any subsequent use of the same specific name.

T[alpa] flavescens Borowski, 1780, vol. 1, pt. 2, p. 88 is based in part upon "La Taupe de Virginie" of Brisson, 1762, Regnum Animale, Leyden, p. 205, and in part upon the yellow variety of the American mole described by Pennant, 1771, Synopsis of Quadrupeds, p. 312. This name is equivalent in part if not entirely to *Scalopus aquaticus aquaticus* (Linnaeus).

Erinaceus tendrac Borowski, 1780, vol. 1, pt. 2, p. 98. The specific name *tendrac* can not be used again in the genus *Erinaceus*, since mention is made of specific characters in the accompanying diagnosis, although it does not seem possible to identify the animal. The habitat of this species is given as the East Indies and Madagascar.

Cervus montanus Borowski, 1780, vol. 1, pt. 3, p. 71. This name is accompanied by a valid description of a mountain form of some deer belonging to the *Cervus elaphus* group. The specific name *montanus* can not be employed again for any member of the genus *Cervus*, although it does not seem possible to identify the animal. The habitat of this deer is not mentioned in the text.

Cervus grönlandicus Borowski, 1780, vol. 1, pt. 3, p. 72 is based upon *Cervus groenlandicus* Brisson, 1762, Regnum Animale, Leyden, p. 60. Greenland is the type locality. The species should therefore stand as *Rangifer grönlandicus* (Borowski).

Balaena glacialis Borowski, 1781, vol. 2, pt. 1, p. 18. Borowski is the first to apply this specific name to the nordkaper or right whale. He states that *Balaena glacialis* is found not only off North Cape, Norway, but also in the southern Atlantic Ocean off the coast of Africa and near the Antillean

islands. The correct citation for the name of the Atlantic right whale will therefore be *Eubalaena glacialis* (Borowski).

Balaena novae angliae Borowski, 1781, vol. 2, pt. 1, p. 21 antedates *B[alaena] nodosa* Bonnaterre, 1789, Tabl. Encyclop. et Méthod. Règnes Nature, Cetologie, p. 5. The diagnosis accompanying this generally overlooked name is essentially the same as that given by Brisson for his *Balaena novae angliae*, 1762, Regnum Animale, Leyden, p. 221. Since Brisson was not a binomial author, specific names proposed by him have no standing under the international code. Borowski, however, applies names in a binomial manner and gives a perfectly valid diagnosis to the same whale in the following words:

"Der Pflokfisch. La Baleine de la nouvelle Angleterre. The Humback-Whale. Bunch-Whale. Hat an der Stelle, wo der Finnfisch seine Flosse trägt einen Höker, wie ein Pflok gestaltet, der hinten weg steht. Derselbe hat 1 Fuss in der Höhe und die Dicke eines Mannskopfs. Seine Brustfinnen sizzen beinahe in der Mitte des Leibes unter dem Bauch und sind 18 Schuh lang. Seine Leibeslänge muss daher ansehnlich sein. Sein Aufenthalt ist an den Küsten von Neuengland. Seine Baarten sind besser als des Finnfisches und das Spek hat mit diesem viel Aehnlichkeit."

It is clear that Borowski's name refers to the same animal as that described by Bonnaterre, which should, therefore, be known as *Megaptera novaeangliae* (Borowski). The type locality is likewise New England.

—*Remington Kellogg.*

THE STATUS OF THE COSTA RICAN RED BAT.

The red bat of Costa Rica was described as *Atalapha frantzii* by Peters (Monatsber. K. Preuss. Akad. Wissensch., Berlin, Jahre 1870, p. 908, 1871). It was listed as *Atalapha noveboracensis* var. *a* (*Atalapha frantzii*) by Dobson (Catal, Chiroptera, Brit. Mus., 1878, p. 271). Under *Atalapha noveboracensis* this bat was recorded by Alston (Biol. Cent. Amer., 1879, p. 22) from Colobre, Panama. In the absence of specimens for examination Miller, in revising the North American Vespertilionidae (North American Fauna No. 13, p. 111, Oct. 16, 1897), placed *Atalapha frantzii* Peters in the synonymy of *Lasiurus borealis mexicanus* (Saussure) of Mexico.

Three specimens of red bat from Boquete, Chiriqui, forming part of a general collection of mammals from western Panama, were submitted to me for identification by the late Mr. Oldfield Thomas. These were regarded as near typical *frantzii* and proved to differ from *L. b. mexicanus* as follows: Size smaller, forearm about 37 (forearm 41 in a specimen of *mexicanus* from Peñuela, near Cordoba, Vera Cruz); upper parts, including hairy portion of interfemoral membranes, deeper rufescent or chestnut, the back more heavily overlaid with this color; under parts washed with darker buff, the basal tone blackish, instead of plumbeous; skull closely resembling that of *mexicanus*, but distinctly smaller.

I have not been able to associate this bat with any of the described forms in South America. The name *Atalapha frantzii* Peters should apparently now stand as *Lasiurus borealis frantzii* (Peters). Mr. Miller has concurred in this conclusion.

—*E. A. Goldman.*

TWO TROPICAL BATS NEW TO THE FAUNA OF PANAMA.

While collecting embryological material in Panama during the winter and spring of 1932, Dr. Robert K. Enders procured about 150 mammals for the U. S. National Museum. Among these specimens are representatives of two South American bats that have not been previously recorded from Panama.

Peropteryx kappleri Peters. Seven specimens (5 ♀, 2 ♂) taken in caves near the mouth of the Rio del Puente, Canal Zone, June 29, 1932, agree in all essential characters with the series collected by Wirt Robinson at San Julian, Venezuela, in 1900 (Proc. U. S. Nat. Mus., vol. 24, pp. 158–159, October 3, 1901). The forearms of the two males measure, respectively, 47 and 48 mm. In the five females the forearm averages 50.3 with extremes of 49 and 53. The corresponding measurements in some of the Venezuelan specimens are: 7 males, 47.8 (47–49); five females 49.8 (48–51).

Dr. Enders tells me that these bats, when disturbed, but before taking wing, opened their mouths and protruded their tongues, at the same time spreading their lips so as to display the conspicuously whitish inner labial surface. This habit was not noticed by Robinson.

Phyllostomus discolor (Wagner). Five males collected on Barro Colorado Island, Canal Zone, April, 1932, fully agree with Dobson's account of this South American bat. They differ slightly but rather consistently from three topotypes of the Mexican *P. verrucosus* in their somewhat greater size (forearm 64 to 66 instead of 59 to 61; condylobasal length of skull 28.2 instead of 27 mm.), but in no other characters that I can discover. This animal can not be identified with either of the two species of "*Phyllostoma*" (*P. unicolor* and *P. minus*) described by LeConte, seventy-five years ago, "as coming from New Granada in Central America" (Proc. Acad. Nat. Sci. Philadelphia, 1857, p. 174). Unless the types of these species are still in existence it will probably be impossible to identify either animal. The measurements (length 63, head 23, extent 274) of *P. minus* suggest a *Carollia*. Those of *P. unicolor* (length 135, head 35, extent 295) might apply to *Phyllostomus hastatus panamensis*, but the extent is scarcely half what it should be (660 in one of Dr. Enders' specimens), and the presence of "five blunt teeth on each side on the outer edge" of the horseshoe is a character that points to some other bat. —*Gerrit S. Miller, Jr.*

SOME NAMES APPLIED TO SEALS BY DYBOWSKI IN 1929.

In an article entitled "Zur Kenntnis der Sibirischen Seehunde" (Bull. Internat. Acad. Pol. Sci. Lett., Cl. Sci. Math. et Nat. Sér. B. Sci. Nat. (II), Année 1929, pp. 405–415, pls. 22–24, Cracovie, December, 1929), Professor B. Dybowski published twenty new names for seals. As some vague and rather misleading allusions to them have subsequently appeared in print it seems important to point out exactly what these names are. They may be listed as follows:

(a) FAMILY NAMES.

1. *Sibirico-bicuspidato-baicalopusidae*, p. 414.
2. *Europaeo-tricuspidato-caspiopusidae*, p. 414.

(b) GENERIC OR GROUP NAMES.

3. *Europäocaspiopusa*, p. 405.
4. *Europaeo-tricuspidato-caspiopusa*, p. 415.
5. *E[uropäo]saimopusa*, p. 405.
6. *E[uropäo]ladogopusa*, p. 405.
7. *E[uropäo]annellatopusa*, p. 405.
8. *Sibirico-baicalopusa*, p. 407.
9. *Baicalopusa*, p. 407.
10. *Sibirico-bicuspidato-baicalopusa*, p. 414.
11. *Sibirico-oronopusa*, p. 405.
12. *Oronopusa*, p. 405.
13. *C[aspiopusa]*, p. 414.

(c) SPECIFIC NAMES.

14. *Baicalopusa dorohostaiskii*, p. 414.
15. *Sibirico-bicuspidato-baicalopusa dorohostaiskii*, p. 414.
16. *Baicalopusa wereschtschagini*, p. 412.
17. *Sibirico-bicuspidato-baicalopusa wereschtschagini*, p. 415.
18. *C[aspiopusa] behningi*, p. 414.
19. *C[aspiopusa] kisielewitschi*, p. 414.
20. *C[aspiopusa] dierzawini*, p. 414.

All of the family and generic or group names (Nos. 1–13) are, according to commonly accepted standards of classification, synonyms, respectively, of *Phocidae* and of *Pusa* Scopoli 1777.

Of the specific names, four (Nos. 14–17) are applied to specimens of *Phoca sibirica* Gmelin that differ from each other in the form (V-shaped or U-shaped) of the anterior emargination of the nasal bones (plates 22–24). The three others (Nos. 18–20) are used to designate individuals of *Phoca caspica* Gmelin with similar inconsequential differences in the outline of the free nasal edge (not figured).

In elaborating his personal schemes of taxonomy and of nomenclature (the latter influenced, perhaps, by chemical terminology) Professor Dybowski has departed so radically from the practice of other zoologists that most of his recently proposed technical terms appear to lie beyond the scope of the International Rules of Zoological Nomenclature. Moreover, the International Commission on Zoological Nomenclature has formally declared (Opinion 105, Smithsonian Misc. Coll., vol. 73, no. 6, pp. 1–3, June 8, 1929), that the names applied by him, in 1926, to isopod crustaceans from Lake Baikal shall be disregarded. Hence there seems to be no reason to cite any of those that he has subsequently used for seals.

—*Gerrit S. Miller, Jr.*

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A NEW WORM SNAKE OF THE GENUS LEPTOTYPHLOPS FROM GUERRERO, MEXICO.

BY ARTHUR LOVERIDGE.

The Museum of Comparative Zoölogy recently received from Mexico a consignment of nearly five hundred reptiles and amphibians which had been collected by the well known naturalist, Mr. W. W. Brown, and presented to the museum by Dr. Thomas Barbour.

While identifying this material I came across four very large worm snakes which fail to agree with any known species and which, therefore, I propose naming

Leptotyphlops maximus, sp. nov.

Type.—Museum of Comparative Zoölogy, No. 33,604. An adult ♂ from between 4,000 and 6,000 feet at Chilpancingo, State of Guerrero, Mexico, collected by W. W. Brown between January and June, 1932.

Paratypes.—Museum of Comparative Zoölogy, Nos. 33,605–33,607 with the same data as the type, one specimen having the head and body badly damaged.

Diagnosis.—Apparently most nearly related to *Leptotyphlops dulcis* (Baird & Girard) with which it agrees in the following characters: Snout not hooked; a supraocular, the ocular being separated from its fellow, on the top of the head, by three shields; ocular bordering the lip between the first and second labials, being separated from the lower part of the nasal by the first labial which does not reach the eye and which is narrower than the lower portion of the ocular and smaller than the lower part of the completely divided nasal; 5 lower labials; 14 midbody scale-rows; anal large.

It differs from *dulcis* in its larger size and proportions, the diameter being included in the total length 37 times (from 37 to 43 in the paratypes) as against 44 to 60 times in the more slender *dulcis;* the length of the tail is included in the total length 21 times (from 19 to 25 in the paratypes) as against 17 to 20 times in *dulcis.* Different coloring.

The new species differs from other Mexican species as follows: From

L. albifrons in the very small supraocular which is smaller than the frontal and very widely separated from the first upper labial which does not reach the eye; possessing 5 instead of 6 lower labials; its large Typhlops-like appearance and size which in length as well as in diameter exceeds any measurements for a Leptotyphlops given by Boulenger (1893, Cat. Snakes Brit. Mus., i., pp. 59–71) or represented in the large series in the Museum of Comparative Zoölogy.

From *L. myopica* (Garman) it differs in possessing only one labial anterior to the ocular, as well as by diameter, etc.

From *L. humilis* (Baird & Girard) it is widely removed by the presence of a supraocular and other characters.

Coloration.—Above, uniformly plumbeus except for extreme tip of tail which is whitish. Below, white, which extends to the lower portion of the rostral and upper labials, the latter being partly dusky.

Measurements.—Type ♂. Total length 300 mm. Length of tail 14 mm. Diameter at midbody 8 mm. Paratypes. Total lengths 270–300 mm. Length of tails 12–15 mm. Diameters at midbody 37–43 mm.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

THE FOUNDING OF NEW COLONIES BY *RETICULITERMES FLAVIPES* KOLLAR.

BY THOS. E. SNYDER, *U. S. Bureau of Entomology,*
AND EDITH P. POPENOE.

During the early Spring of 1931, breeding and crossing experiments were again[1] instituted at Washington, D. C., with reproductive forms of the termite *Reticulitermes flavipes* Kol. (Fig 1). There have been differences in the results of breeding experiments carried on by entomologists in this country and abroad. In case of species of *Reticulitermes*, Snyder's experiments have shown that the first brood reared by macropterous adults are all workers except one or two soldiers. The first brood of brachypterous adults appear to be the same; but even in long established colonies no macropterous adults are produced where the parents are brachypterous. Of course where the parent adults are macropterous, winged or macropterous forms are later produced. No success has been attained in breeding apterous reproductive forms in these artificial colonies maintained in the laboratory.

Like the macropterous adults, brachypterous and apterous reproductive forms are true adult castes. They apparently breed true to type over long periods and never produce macropterous forms. Imms and the late Dr. Thompson with Snyder[2] believe that the origin of the termite castes can best be explained by genetics; there is a parallelism between these castes and Mendelian segregants. While the progeny would vary with the

1 *a* 1920 Snyder, T. E. The Colonizing Reproductive Adults of Termites. Proc. Ent. Soc. Wash. XXII, no. 6, pp. 109-150 June.

b 1926 Snyder, T. E. The Biology of the termite Castes. Quart. Rev. Biol., vol. 1, No. 4, p. 522-52, figs. 15. Oct.

2 1925 Snyder, T. E. The Origin of the Castes in termites. Proc. Biological Soc. of Wash., vol. 38, pp. 57-68, May 26.

age of the colony of termites and with the genus or at least family, the character of the brood might be predicted by generalized formulae.

On April 18th, a series of eight groups of incipient colonies of macropterous males and females were placed gregariously in eight tin covered boxes each containing moist sand, a small block of white pine wood with a cell excavated on the under surface where in contact with the sand and several disks of specially washed pure cellulose filter paper, Whatman number 43.

These macropterous adults were collected at Falls Church, Va., from parent colonies from which the first swarm of winged adults had not yet occurred that season. Since they still had their wings, copulation had not yet taken place. Young brachypterous adults, freshly molted to maturity but not fully pigmented, were also collected from these colonies in nature before the swarm and hence these forms also had not yet copulated. Copulation does not take place until after leaving the parent colony and the establishment of new incipient colonies.

On April 27th, two similar pure incipient colonies of brachypterous sexual adults of *R. flavipes* were established gregariously in like manner with the exception that workers were added, as has been found necessary to feed these reproductive forms free from intestinal protozoa, as well as a few soldiers.

On April 29th and 30th, ten colonies of crosses of macropterous and brachypterous males and females were established gregariously in similar colonies, workers and soldiers being added. The ratio of males to females ranged from an equal number, as 6 to 6; to one half as many, 11 males to 22 females or 17 to 34; or the proportion of 14 males to 18 females, or 15 to 19.

Sexual attraction was immediately evidenced in the crossed as well as pure colonies. Apparently there was no difference in degree, whether the male was macropterous or brachypterous, the female of the opposite type was equally attractive and attracted, for this caudal attraction of male to female was also to be evidenced in attraction of the female to the male.

On April 20th, in the pure colonies of macropterous adults there was aggregation to the soil underneath the filter paper disks—no adults were in the cell previously excavated in the

block of wood for them,—all were dealated. April 21st showed definite funnel shaped pits.

On May 11th clusters of eggs the size of small peas were in these colonies; on May 17th more eggs were present—all being in a mass together or in other cases there being two smaller clusters in separate cells.

On May 28th one newly hatched termite was observed. On June 2nd from 1 to 8 recently hatched young were observed in the colonies. On June 20th and 24th young and eggs were numerous. On June 29th eggs and young were present. On July 7th there was a noticeable difference in the sizes of the young of various ages, eggs were also present. On July 18th some of the young were fairly large, newly hatched young still were present. On July 24th and 30th young of different ages were present, some of fairly large size, young were numerous in these gregarious colonies, eggs were also present. On August 8th clusters of eggs, recently hatched young and young of larger size were present. August 14th showed but little change. On August 24th the young were of fairly large size.

On Sept. 4th, several colonies were dead, others moribund, the young either dying or being eaten before the death of the adults. On Sept. 12th and 21st, many young were present in the surviving colonies, including recently hatched young. On Oct. 2nd and 12th fairly large to very small young were present in these colonies. On Oct. 22nd other colonies were dead, the young always being the first to disappear. Clean filter paper was constantly used to replace moldy paper and films of mold on the sand were removed when observed. The temperature and humidity were kept as nearly the same as possible.

On Nov. 3rd, 11th and 24th, young were present in all remaining colonies; Dec. 4th showed the same condition. On Dec. 9th and 14th no recently hatched or very young were observed in the three surviving colonies. All of the brood were of the nanitic mature adult size so characteristic of young or incipient colonies. Only one or two soldiers were present, all of the others being workers.

To date, these experiments conducted during 1931 confirm the results of previous breedings first begun in 1911. The progeny of pure colonies of macropterous males and females is the same during the first nine months whether the colonies are

in the aggregate or whether a single male and female produce the brood.

Gregarious colonies appear to be relatively somewhat healthier and more aggressive than those where the parents consist of a single male and female. This is interesting in connection with the experiments of Dr. W. C. Allee of the University of Chicago relating to the rôle of aggregation in ecology. Of course our data are meagre and inconclusive. Cleaning mold or mycelium off of each other during "trophallaxis" or licking each other might explain these more favorable conditions in gregarious colonies.

True cannibalism was observed, healthy young being eaten—although food and moisture were apparently favorable. Filter paper was preferred to wood. Only in one colony was the artificial cell made in the block of wood utilized; in this case it was covered over with a shed of sand. In two other cases tubes or sheds of sand were constructed on the bottom or sides of the wood and used for colony habitations. In one instance the top of the block was grooved.

In the two pure colonies of gregarious brachypterous males and females established on April 27, young were produced, shortly after which both colonies died due to heavy mold infections.

The ten colonies of the crosses established on April 29th and 30th were in healthy condition on May 11, the males and females were active in cells together and the brachypterous reproductive adults were attaining a deeper yellow-brown pigmentation. On May 15 about three dozen eggs were present in one colony. Nematodes were abundant in some of the colonies and apparently destroyed two colonies. On May 17th the eggs were being tended by workers. On May 29th the workers were moving the eggs about from place to place so that sometimes the eggs were visible, at other times not. All but two of the surviving colonies had now died, probably due to mold. On June 1, the eggs were fewer in numbers.

On June 25th young termites several days old were observed in the colony where the 7 males were brachypterous and the 16 females were macropterous. On June 17, 24 and 29 a few young termites of different ages were observed in both remaining colonies; at least five young were visible at one time.

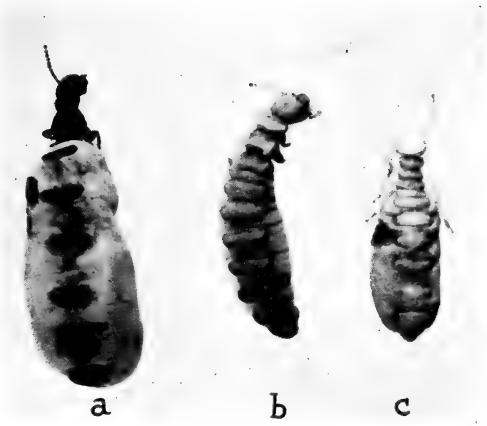

Fig. 1. Three types of female reproductive forms or queens of *Reticulitermes flavipes* Kollar, each type has a male of corresponding form. (a) Queen developed from the winged adult or macropterous type; (b) queen developed from the short wing pad or brachypterous form; (c) the wingless or apterous type of queen. Greatly enlarged, all are physogastric.

On July 3rd no young or macropterous female adults were observed, all being dead, and the brachypterous male adults were eating the workers alive, a piece at a time, workers being observed in various stages of dismemberment and the males actually feeding on them. On July 30th this colony was nearly all dead. On Aug. 8th the brachypterous males were still alive and on Sept. 1st several brachypterous males and a few workers survived.

On Sept. 4th, three macropterous females were added to this colony from replacement colonies. On Sept. 12th both the males and females were alive but most of the workers had been eaten alive although food and moisture conditions appeared to be satisfactory. On Oct. 2nd the macropterous females were dead but had not been eaten; all the workers had disappeared. On Oct. 22nd only one or two moribund brachypterous males were alive in a very weakened and shrunken condition. This colony was considered to be destroyed.

On July 18th, in the gregarious colony where the macropterous males were outnumbered by the brachypterous females in the ratio 22 to 11, newly hatched young were observed. On July 30th this colony was nearly all dead and no young remained.

These experiments confirm observations in nature that the various reproductive adults do crossbreed within the species and that they will do so in artificial colonies. In previous experiments only eggs had been obtained from similar crossings.

Eggs, healthy young and workers are eaten; cannibalism is a fact; living reproductive forms also are doubtless eaten. Cannibalism gives an easy and quick access to concentrated food and moisture. It probably is a common occurrence even under more natural conditions of colony life.

We still are unable to answer what is the progeny of these crosses. The authors believe that the character of the progeny can be predicted by genetic formulae, despite Weyer's[3] recent criticism of Imm's formula, i. e., that the sexuals could not thus produce a normal colony.

[3]1931 Weyer, F. Das Problem der Kasten-differenzierung bei Termiten Biologisch Zentralblatt, 51 Bd., Heft 7, p. 353-73, 3 figs., 2 tables.

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PROCEEDINGS

OF THE

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A NEW GENUS OF FUNDULINE CYPRINODONT FISHES FROM THE ORINOCO BASIN, VENEZUELA.

BY GEORGE S. MYERS.

When I visited the United States National Museum in September, 1930, Mr. Barton A. Bean asked me to examine some Cyprinodont fishes which had been received from Dr. F. F. Russell of the International Health Board of the Rockefeller Foundation as mosquito destroyers. Among them was a single specimen of a very peculiar form from Venezuela closely resembling certain East African species of *Adiniops*.

In many anti-larval campaigns various Cyprinodonts (*Gambusia*, *Lebistes*, and others) have been transported long distances and introduced into mosquito infested areas. This Venezuelan fish so closely resembled *Adiniops* that in the absence of comparative material I could assign it to no other genus, and I suggested to Mr. Bean the possibility of an importation, remote though it seemed.

Thus the matter rested until this summer. Then I saw Ladewig's paper on a so far unidentified aquarium fish recently imported into Germany from Venezuela. His description and sketch reminded me of the Venezuelan fish in the National Museum and I at once wrote to Washington for the specimen. Through the courtesy of Dr. Alexander Wetmore and Dr. Leonhard Stejneger, I now have it before me. With comparative material of most of the African and American genera of Cyprinodontidae at hand I find that this fish represents a very distinct new genus which is herewith described.

AUSTROFUNDULUS, new genus.

Genotype: *Austrofundulus transilis*, new species.

Preorbital extremely narrow, forming a rectangular notch before eye,

the upper part of the vertical limb of which slants backward. Lip-rictus angled, fitting up into the notch when mouth is closed. Maxillary entirely imbedded in the flesh of the preorbital region. Body deep, greatly compressed posteriorly, wide and heavy in the head region. Head at occiput deeper than wide. Caudal peduncle not blade like below. Orbital margin not free, the membrane confluent with the surrounding skin, as in *Rivulus*. Pseudobranchiae present. A few deciduous teeth on the head of the vomer. Teeth in each jaw conical, recurved, in a relatively wide band of several irregular rows, the outer one of considerably enlarged and very widely spaced teeth. Dorsal and anal fins of moderate length, the posterior rays longest, their origins almost opposite, that of the dorsal slightly more posterior. Caudal fin subtruncate, finely scaled more than halfway to the tip; the caudal scales are in straight series, each composed partly of one and partly of two rows of scales, each series extending out over the interspace between two caudal rays, the various series diverging and becoming reduced in size as they proceed outwards. Pelvic fins not confluent but almost contiguous, separated by a very narrow space.

Austrofundulus transilis, new species.

Holotype.—An adult male, obtained in a pond in the State of Guarico, in the Orinoco drainage of Venezuela, received from Dr. Frederick F. Russell, U. S. N. M. No. 92191.

Top of head flattened, the dorsal profile slightly concave to above preopercle, thence convex to the highest part of the dorsum over middle of appressed pectoral, thence straight and slightly downward to dorsal origin and peduncle. Ventral profile of head strongly convex from lower lip, the convexity continued by the belly to the pelvic fins, thence upward along anal base to peduncle. Dorsum from above pectoral origin compressed and rather sharp. Appressed pectoral fins not quite reaching vertical of pelvic origin. Pelvics pointed, reaching base of third or fourth anal ray. Dorsal and anal fins covered with a tough membrane, this thicker at base.

Dorsal 13½, first ray very short, others increasing in length to tenth or eleventh; tips broken in type. Anal 15½, first ray short, others increasing in length to the twelfth. Scales 33 lateral to end of hypural, transverse 12 from dorsal origin to pelvic base.

The measurements of the holotype follow. All longitudinal measurements are made to the vertical of the point indicated, on an ideal longitudinal axis of the fish.

Measurements of Holotype in Millimeters.

Standard length	40.0
Total length	50.0
Greatest depth	13.0
Least depth caudal peduncle	7.0
Length caudal peduncle (from anal)	8.0
Length head	12.0
Depth head at occiput	10.0

Greatest width head	8.0
Eye diameter	4.0
Interorbital	6.0
Length snout	3.0
Snout tip to dorsal origin	26.0
Snout tip to anal origin	24.5
Snout tip to pelvic origin	20.0
Length pectoral	7.0
Length pelvic	5.0
Length dorsal base	8.0
Length anal base	8.0
Length longest anal ray	6.5

The holotype and only specimen is badly faded. It is wholly pale yellowish brown, but there are indications of darker spots on the dorsal and anal fins.

Austrofundulus is a member of the subfamily Fundulinæ and more specifically of the tribe Rivulini (see Myers, 1931). In my synopsis of the Neotropical Rivulini (Myers, 1927) it falls in the group containing *Neofundulus*, *Cynopœcilus*, and *Cynolebias*. I have compared it directly with all three. It differs from these, as well as from all the other genera there considered (save perhaps *Rivulichthys*, which I have not seen) in the peculiar squamation of the caudal. *Rivulichthys* is an elongate fish with a very posterior dorsal, very different from *Austrofundulus*. Among the Rivulini the new genus agrees in the caudal squamation only with an undescribed African genus (Myers, 1932). The problematical *Ilyodon* Eigenmann (1907) from Paraguay differs at once in the bicuspid teeth.

The resemblance of *Austrofundulus* to the African *Adiniops* is most remarkable, but the likeness appears to be a matter of parallelism rather than of close relationship. *Adiniops* differs not only in the normal scaling of the caudal base but also in the free orbital rim and in the maxillary. In *Adiniops* and its close relatives, *Aphyosemion* and *Nothobranchius*, the maxillary is closely bound down to the preorbital region by thick skin nearly to its end, but the very tip of the bone is left projecting as a round, membrane-covered knob. In *Austrofundulus*, on the other hand, the maxillary is entirely imbedded in the flesh of the preorbital region, and the tip is not visible. Furthermore, the vertical limb of the preorbital notch (the line of the preorbital edge) slants dorso-posteriorly more than in *Adiniops*, and the predorsal region is compressed, not flattened as in the African genera.

The fish described and figured by Ladewig (1932) as "*Fundulus* spec. ? aus Venezuela" is probably an *Austrofundulus*. One male and two female specimens were transported alive to Berlin in March, 1932, by Dr. Oeser, who collected them while travelling in Venezuela. The locality given by Ladewig is "ein Bach in Venezuela in 1000 m. Höhe." The fish have been bred in the aquarium establishment of Scholze and Pötzschke in Berlin, and Ladewig gives details of the breeding. Whether the species is identical with *A. transilis* or not I can not say.

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PROCEEDINGS

OF THE

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NOTES ON THE ABYSSINIAN RED-CAPPED LARK AND LONG-BILLED PIPIT.

BY HERBERT FRIEDMANN.[1]

1. The Red-capped Lark.

The red-capped lark of northern Ethiopia has been known generally under the name *Tephrocorys cinerea ruficeps* (Rüppell). This is based on *Alauda ruficeps* Rüppell, described in 1840 (Neue Wirbelth., p. 102, pl. 38, fig. 1: Entschetqab, Simien Province). The name *ruficeps* is, however, preoccupied by *Alauda arvensis ruficeps* Bechstein 1795 (Gem. Nat. Deutschl., iv, p. 120).

Sherborn does not list Bechstein's name in his "Index Animalium," but Hartet (Vogel pal. Fauna, 1905, p. 244) lists it as a synonym of *Melanocorypha sibirica*, with the comment that while Bechstein's name has been considered a synonym of *Melanocorypha sibirica*, it appears more probable that the bird Bechstein had before him was an *Alauda arvensis*. However, this is beside the main point; both Bechstein and Rüppell described their birds in the genus *Alauda*.

Sclater (Syst. Avium Aethiop., pt. 2, 1930, p. 333) does not consider *erlangeri* Neumann as distinct from *ruficeps*, in which case Neumann's name could be applied to all the Abyssinian birds. However, I have seen several specimens from northern Ethiopia in the Field Museum and find them to be definitely darker and recognizably distinct from more southern birds (true *erlangeri*). For the northern bird I propose the name

Tephrocorys cinerea fuertesi nom. nov.

in honor of the late Louis Agassiz Fuertes whose last field work was done in northern Ethiopia and whose name is a welcome addition to the personalia of African ornithology.

[1] Published by permission of the secretary of the Smithsonian Institution.

2. The Long-billed Pipit.

Hartert (Nov. Zool., vol. 24, 1917, pp. 457–458), Sclater (Syst. Avium Aethiop., pt. 2, 1930, p. 341), and others have claimed that the correct name of the long-billed pipit is *Anthus sordidus* Rüppell and not *Anthus nicholsoni* Sharpe, as Neumann (Journ. f. Ornith., 1906, p. 232) and van Someren (Nov. Zool., vol. 29, 1922, pp. 180–181) have concluded. However, all previous workers appear to have overlooked the fact that *Anthus sordidus* Rüppell 1840 (Neue Wirbelth., p. 103, pl. 39, fig. 1: Simien Province) is preoccupied by *Anthus sordidus* Lesson 1830 (Voyage autour du monde, La Coquille; Zoologie, tome I, partie ii, (livr. 15), p. 664: near Talcahuano, Prov. Concepcion, Chile. Type in Paris Museum), which, in turn, is a synonym of *Lessonia rufa rufa* (Gmelin). (Hellmayr, Birds of Chile, 1932, p. 131.) The oldest name available for the species is thus *nicholsoni* Sharpe. The northern Ethiopian race, hitherto known as *sordidus*, is thus without a name, but inasmuch as it is said to be only doubtfully distinguishable from *hararensis* I do not care to propose a substitute name for it. I have seen no material from Eritrea or northern Ethiopia and am not able to judge the validity of the northern form.

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PROCEEDINGS
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SOME NOTES ON RARE BIRDS OF THE WASHINGTON REGION.

BY W. HOWARD BALL.

The following specimens in the U. S. National Museum seem worthy of placing on record.

1. European Widgeon. *Mareca penelope* (Linnaeus). Brent M. Morgan took a female at Neabsco, Virginia, December 21, 1929. This is the fourth record for the region.

2. Long-billed Dowitcher. *Limnodromus griseus scolopaceus* (Say). An immature bird was taken by the writer on the mud flats off Hains Point, D. C., September 10, 1929. This form was determined by H. C. Oberholser and is the second record for the region.

3. Western Sandpiper, *Ereunetes maurii* Cabanis. In the latest summary of the birds of the D. C. area[1] Miss Cooke has this to say regarding *Ereunetes maurii:* "Accidental in fall migration, has been taken in three seasons." Since the appearance of her paper, the writer has accumulated data which would indicate that the Western Sandpiper is a not uncommon migrant in the fall. At the present time there are forty-four specimens known to the writer which have been taken locally. These were taken in ten different years, ranging from July 20, 1929 (Ball) at Chesapeake Beach, Maryland, to September 25, 1919 (2 specimens, National Museum) at Eastern Branch, D. C. The first specimen was taken by William Palmer at Four Mile Run, Virginia, September 8, 1894. There is one spring record, May 24, 1926 (Bartsch) taken on Columbia Island, D. C. R. B. Overington took one at Laurel, Maryland, August 4, 1903.

A careful check of the "Peeps" during the last five years by the writer showed that the Western Sandpiper varied in numbers from one to thirty-two, this latter number being present in a mixed flock of about 500, mostly *E. pusillus*, seen Aug. 1, 1930, at Alexander Island, Virginia. During the reclamation of Eastern Branch at Benning Bridge, D. C., *E. maurii* was present from July 20 until August 5, 1929, the flock running as high as eighteen birds, July 22. On the site of the Mt. Vernon Boulevard development at Arlington Beach, Virginia, twenty-five were seen July 25, 1930.

[1] M. T. Cooke, Proc. Biol. Soc. Wash., vol. 42, March 25, 1929, p. 30.

At Alexandria, Hunting Creek, Virginia, thirty were seen September 6–7, 1931, and on September 9, 1932, twelve were seen here.

4. Cairns's Warbler. *Dendroica caerulescens cairnsi* Coues. An adult male was taken by Edwin M. Hasbrouck at Washington, D. C., April 29, 1888. This is an unusually well marked bird, the patch on the back being almost solid black. Dr. H. Friedmann is responsible for bringing this to the attention of the writer. It is an addition to the local avifauna.

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PROCEEDINGS
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NEW BIRDS FROM CHIRIQUI PROVINCE, PANAMA.

BY M. E. McLELLAN DAVIDSON.

A preliminary study of the material resulting from field work conducted on behalf of the California Academy of Sciences in Chiriqui Province, Panama, between 1929 and 1932, reveals the existence of several new birds, three of which are described below.

Automolus xanthippe, sp. nov.

Type.—No. 33,220, Collection California Academy of Sciences, adult female; Barriles (4200 feet), Chiriqui, Panama, January 28, 1931; M. E. Davidson.

Description.—Forehead, crown, occiput, outer aspect of wing, and central rectrices Bay, in marked contrast to the Raw Umber of the scapulars, interscapulars, and rump; upper tail-coverts and lateral retrices Chestnut; feathers of the lores Cinnamon-Buff lightly tipped with black; indistinct supra-auricular stripe inclining to Cinnamon-Brown, auriculars slightly darker, but with pale Cinnamon-Buff mesial streaks; the Ochraceous-Tawny of the chin and throat passing into Clay Color on the center of the abdomen and into Chestnut on the longer under tail-coverts; sides and flanks Saccardo's Umber; axillars, lining of wing, and inner margins of remiges Ochraceous-Tawny; maxilla and contiguous area of mandible dark horn color, remainder of mandible pale straw color. Wing, 85.0 mm.; tail, 77.5; length of culmen, 28.2; depth of bill at gonydial angle, 8.0; tarsus, 26.0; middle toe, 22.5.

Remarks.—Only the one specimen of *Automolus xanthippe* is extant, but in the coloration of the crown, wing, tail, and throat, as well as in the much heavier bill, and longer tarsus and middle toe, the new species is distinguished from *Automolus ochrolæmus exsertus*, to which it is most nearly allied. The contrasting wings and back differentiate it from *Automolus fumosus*.

Spodiornis barrilesensis, sp. nov.

Type.—No. 33,413, Collection California Academy of Sciences, adult male; Barriles (4500 feet), Chiriqui, Panama, January 28, 1931; M. E. Davidson.

Description.—Above, including tail and lesser wing-coverts, uniform Dark Neutral Gray; remainder of wing feathers externally black, margined with Deep Neutral Gray; under surface, together with under wing-coverts and axillars, Deep Neutral Gray, becoming slightly paler on lower abdomen and under tail-coverts, the latter narrowly margined with white; line along commissure on maxilla and mandible pale horn color, the remainder of bill dark horn color. Wing, 71.0 mm.; tail, 48.0; length of culmen, 16.0; breadth of bill at base, 7.0; tarsus, 18.0; middle toe, 13.0.

Remarks.—In coloration *Spodiornis barrilesensis* is identical with *S. j. jardinii*, within the range of which the type locality of the new species lies, but the form and size of the bill absolutely separate the two species. The bill of *S. barrilesensis* is not only longer and basally deeper than in *S. j. jardinii*, but it also has a greater breadth at base, the mandible being quite tumid. The nasal fossæ of *S. barrilesensis* are conspicuously deeper and the nares decidedly larger than those in *S. j. jardinii*. In these latter particulars the new species approaches *Acanthidops bairdi*, but the characteristic concavity of the culmen of *A. bairdi* is absent and the whole bill is much heavier. It would seem, however, that a very close relationship between *Acanthidops* and *Spodiornis* is indicated in the characters exhibited by *S. barrilesensis*. The wing formula of *Spodiornis barrilesensis* is the same as that of *S. jardinii*.

Hylophilus viridiflavus pallescens, subsp. nov.

Type.—No. 32,909, Collection California Academy of Sciences, adult male; near Concepcion (1500 feet), Chiriqui, Panama, December 6, 1929; M. E. Davidson.

Subspecific characters.—Similar to *H. v. viridiflavus*, but paler and duller, Olive-Citrine above, slightly grayer on the head; below pale Straw Yellow, becoming grayish white on throat, the breast washed with deep Olive Buff; under wing-coverts and inner edgings of the remiges pale straw yellow.

Measurements.—Male (type): wing, 56.5 mm.; tail, 50.5; culmen, 12.5; tarsus, 18.5. Female: wing, 56.5; tail, 49.0; culmen, 13.0; tarsus, 18.5.

Range.—Southwestern Costa Rica to western Chiriqui.

Remarks.—The two Concepcion birds are readily distinguishable by their color characters from two males of *H. v. viridiflavus* in the collection of the California Academy of Sciences, one secured near San Felix and the other taken near the base of Cerro Flores, Chiriqui, Panama. These latter examples conform very closely to Lawrence's description of the type from the Panama Railroad, Panama. A series of *H. viridiflavus* from Buenos Aires and Pozo Azul, Costa Rica, shows that a certain amount of individual variation exists, but that undoubtedly these birds may be ascribed to the new subspecies.

I am indebted to Dr. Frank M. Chapman, American Museum of Natural History, and to Mr. W. E. Clyde Todd, Carnegie Museum, for the loan of specimens used in the preparation of this paper. The opportunity to examine pertinent material in the collections of the U. S. National Museum and the Museum of Comparative Zoölogy is also greatly appreciated.

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PROCEEDINGS

OF THE

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A NEW SUBSPECIES OF *COLINUS NIGROGULARIS* (GOULD).

BY E. W. NELSON.

In 1923 Mr. Howard E. Coffin, cooperating with the Biological Survey, generously financed a project to introduce ocellated turkeys (*Agriocharis ocellata*) and other tropical American game birds, and to experiment in acclimatizing and domesticating them at his winter home on Sapaloe Island, Georgia. For the purpose of capturing the live birds required, Harry Malleis, a young naturalist, was sent to the Lake Peten district, Guatemala, where he spent several seasons. The work in the field was much facilitated by the friendly assistance of Mr. P. W. Shufeldt, who was then conducting extensive chicle gum gathering operations in that area.

From time to time, as occasion offered, Malleis collected study specimens of birds and mammals for the Biological Survey. Among the birds is a series of quail which proves to represent a previously undescribed subspecies of *Colinus nigrogularis*.

The discovery of a representative of the genus *Colinus* at Lake Peten was a source of much surprise to me, in view of the fact that several ornithologists have collected birds there in the past without recording it; notably Morelet in 1847, Leyland in 1857, and Salvin in 1861. It is well known that the general habits of birds of this genus, through their loud call notes and their liking for old fields and other open areas, where they go in bevies, render them among the most conspicuous species in any locality they inhabit. For this reason the failure of the earlier naturalists to note the species about Lake Peten gives rise to some doubt concerning its presence there in those days. It is possible that this quail is a comparatively recent arrival from the open pine forested areas of British Honduras where it has been found by several naturalists, including P. W. Shufeldt and Leyland, who missed it at Lake Peten. This is a matter worth investigation by the next ornithologist visiting the Peten area.

In recognition of Mr. Coffin's interest in the Lake Peten expedition it gives me pleasure to name this handsome little game bird in his honor.

Colinus nigrogularis coffini, subsp. nov.

LAKE PETEN QUAIL.

Type.—From La Libertad, Peten, Guatemala. No. 302329, ♂ adult, U. S. National Museum (Biological Survey collection), collected by Harry Malleis, September 10, 1923.

Distribution.—Lake Peten district, Guatemala, and open pine forested parts of British Honduras.

General characters.—Both males and females smaller and darker, more brownish in general color, than typical *nigrogularis* from Yucatan. *Male:* Middle of crown more blackish; white on forehead and sides of crown more reduced and duller; white of feathers of underparts, their black borders, black of throat patch and black superciliary line duller; all rufous coloring on upper and underparts darker. *Female:* Above more dusky brownish; breast and sides of body darker.

Description of male (type).—Middle of crown dull blackish obscurely streaked by narrow dull grayish-buffy borders of feathers, these borders broadening posteriorly, becoming dominant color bordering crown back of orbits and on nape, thence changing on back and sides of neck to white median lines and rufous chestnut borders on feathers; upper back mainly rufous chestnut, the feathers with slightly paler median lines, and narrowly edged with finely mixed black and buffy grayish; white area on forehead much narrower than in typical *nigrogularis*, represented by sparse number of white tips and narrow shaft lines on feathers, broadening posteriorly on each side as narrow white stripes bordering crown to orbits; chin and throat dull black, a narrow line of same extending around base of upper mandible, and including lores and orbits extending back as superciliary stripe; black of superciliary stripe separated from throat patch by white stripe beginning as a narrow wedge-point under lores and broadening posteriorly to form a roughly defined band about posterior border of throat patch; middle of back, rump, and tertiaries generally dull grayish brown, the general effect produced by large subterminal dull black sub-rectangular spots on feathers otherwise irregularly marked with dark brown, dull buffy, and dingy gray; inner web of tertiaries bordered by dull white, narrower than in *nigrogularis;* upper tail coverts similar to rump but with strong median black lines; tail feathers mouse gray, variegated on upper side of middle feathers and outer webs of others with obscure dingy grayish vermiculations; primaries and secondaries hair brown, outer webs of secondaries narrowly bordered and marked with dull buffy; wing coverts mainly Sanford brown, distinctly paler than rufous chestnut on neck and upper back, narrowly edged with buffy gray variegated by obscure blackish shaft lines and subterminal borders; lower neck, breast, and sides of body with coarsely scaled effect due to the dull white feathers sharply bordered with dull black, very narrow near white band bordering black throat patch and becoming broad and strongly contrasted posteriorly; black borders of feathers on sides with more or less strongly marked inner border of rusty rufous, sometimes mixed

with blackish; rufous chestnut replacing black border on some feathers; abdomen, thighs, and under tail coverts rather dark dull rusty cinnamon variegated with buffy grayish and blackish, with subterminal black spots.

Female (topotype).—Middle of crown dull blackish, becoming darker on nape; feathers on top and sides of head and neck bordered with cinnamon, narrow on crown, broader and paler on neck where contrasting strongly with black centers; chin, throat, and superciliary stripe deep ochraceous tawny as in typical *nigrogularis;* fine narrow black line extending back below eye to dull russet brown ear coverts; entire back, including wing coverts and tertiaries verona brown, irregularly and obscurely marked with dull brownish black and dull buffy whitish spots; extensive black spots on tertiaries bordered on inner side with pale buffy whitish; middle of feathers on lower back blackish centrally with brown borders; upper tail coverts with well marked median blackish lines, broadly bordered with brown irregularly barred and maculated with dull buffy white; tail above light slaty brown, finely edged and vermiculated on upper surface with dull grayish and dull buffy whitish; underparts of neck and breast dusky brown spotted with white; feathers of this area blackish brown with black tip, a subterminal bar of pale ochraceous succeeded by a rounded white spot on each web; posteriorly, on sides of body, feathers have shaft lines of dark ochraceous with large black and whitish markings on webs producing a paler, more coarsely blotched effect than on breast; abdomen and thighs pale dingy ochraceous, feathers indistinctly and irregularly barred with dusky; under tail coverts deep rich rufous with small median wedge-shaped black spots at tips and pale ochraceous or whitish spots on ends of both webs.

Measurements of ♂ (type).—Wing, 95 mm.; tail, 48; culmen, 13; tarsus, 29.

Specimens examined.—Total number 19, as follows:

Guatemala: La Libertad, Peten (type locality), 16 (9 partly grown young); Pacoman, Peten, 1.

British Honduras: Near City of Belize, 1; Pine Ridge, 1.

Remarks.—For many years *Colinus nigrogularis segoviensis* of Ridgway was treated as a synonym of typical *Colinus nigrogularis* Gould. A comparison of the two adult males that were the basis for Ridgway's description with a considerable series of typical *nigrogularis* from the arid parts of the Peninsula of Yucatan shows them to represent a strongly marked subspecies. The Yucatan bird has the clearer and paler colors indicative of the hot arid conditions prevailing so much of the time in its habitat, while *segoviensis* has the darker, richer coloring to be expected of a form living in a much more humid climate.

The two original specimens of *segoviensis* were collected by Dr. C. H. Townsend more than twenty-five miles above the mouth of the Segovia River in the open, grassy pine forest through which the river flows. *Colinus nigrogularis coffini* from British Honduras and the Peten District of Guatemala is much more like *segoviensis* in its dark coloration, although geographically it is much nearer the home of the pale colored typical *nigrogularis.*

All of these forms belong in the tropical lowlands of the Atlantic drainage, perhaps never ranging more than 1,000 feet above sea level.

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PROCEEDINGS

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NOTES ON BLIND SNAKES FROM LOWER CENTRAL AMERICA.[1]

BY EMMETT REID DUNN.

In the course of the last few years, thanks to Dr. Thomas Barbour, the Directors of the John Simon Guggenheim Memorial Fellowships, the curators of various museums and Señor Martinez of San Jose, Costa Rica, I have seen 20 specimens of what is usually considered Helminthophis from Costa Rica and Panama. Three of these have never been reported on and are in my private collection. The others are: one in the Museum of the University of Michigan; five in the U. S. National Museum; three in the Museum of Comparative Zoölogy; four in the Berlin Museum; one in Paris; one in Vienna; and one in Frankfort. I am aware of no other specimens from these countries in other Museums or mentioned in the literature. This material includes the types of four species.

Amaral in his 1924 paper on this genus (Proc. New England Zoöl. Club, 9, p. 25) regards Costa Rican and Panamanian specimens as representing no less than five species. I, on the other hand, am unable to find more than two species among the 20 specimens I have seen.

I should define these two species as follows:

A. Prefrontals very large, in contact behind the rostral; ocular narrowly in contact with the third upper labial or separated from it by the subocular; two preoculars, upper large; a supraocular between upper preocular and frontal; ocular not in contact with frontal; upper preocular in contact with 2d labial; lower preocular in contact with 2d and 3d labial; 22 scale rows; whole head white ..... *frontalis*

AA. Prefrontals smaller, not meeting behind rostral; ocular narrowly in contact with 3d upper labial or separated from it by the subocular; two preoculars; a supraocular between ocular and frontal; upper preocular in contact with frontal, not in

[1]Contributions from the Department of Zoölogy, Haverford College, No. 13.

contact with 2d labial; lower preocular in contact with 2d and 3d labials; subocular between ocular and 4th labial; supraocular in contact with a single wide postfrontal, or with with the outer of three small postfrontals; 22 scale rows; snout (occasionally whole head) white ..... *albirostris*

An explanation of the status of the forms which I consider synonymous follows.

Both Amaral and I agree as to the distinctness of *frontalis*. My own specimen, from San Jose, kindly presented to me by Señor Martinez, agrees beautifully with Peter's figure and with his type. The ocular in my specimen is narrowly in contact with the 3d labial on the right side, and narrowly separated from the 3d labial by the subocular on the left.

Amaral states that *albirostris* has the prefrontal in contact with the 2d labial behind the nasal. This is not true of the types in Berlin. No such statement occurs in Peter's brief Latin description. The statement dates from Boulenger's Catalogue, where it occurs in the description of this species which he considered synonymous with Garman's *emunctus*. I agree in this opinion, but Garman says nothing of the sort about *emunctus*, and it is difficult to imagine what basis Boulenger had for the statement of the prefrontal-2d labial contact, since he had no specimens of either *albirostris* or *emunctus*. The prefrontal in the types of both species is separated from the second labial by the nasal and the lower preocular. The ocular is narrowly in contact with the 3d labial in both types of *albirostris*. One of them has a single wide postfrontal, and the other has this plate divided into three smaller plates.

Amaral says that *canellei* has no subocular, and the third labial widely in contact with the ocular. For the first statement Moquard is the authority. For the second Moquard says the contact is "*assez etroit*" which I take to mean narrowly, not widely. The type in Paris agrees with Moquard's original remark. Moquard, however, did not recognize the subocular as such, but since the ocular is only narrowly in contact with the 3d labial, some scale intervenes part way between them and also cuts off the ocular from the fourth labial. This scale is the subocular. There are three small postfrontals. There is thus no difference in scalation between the types of *albirostris* and the type of *canellei*. The type of *canellei* has the whole head white, and is the only specimen of sixteen seen which has it so.

Amaral considers *emunctus* and *bondensis* as distinct from *albirostris* and *canellei* on the basis of characters which I have just shown do not exist in the types of the two latter. His differences between the two former species I consider purely individual variation. One is the question of a single large postfrontal versus three small postfrontals. Twelve specimens, including a type of *albirostris*, have one large postfrontal; four specimens, including, a type of *albirostris*, the type of *emunctus*, and the type of *canellei*, have three small postfrontals. Two specimens in my own collection, obtained near Panama City, differ in this respect, but are identical in every other way, thus practically repeating the two types of *albirostris*. The

ocular is separated from the 3d labial in the type of *emunctus* only, but the contact in the fifteen other specimens is so narrow that I can not attach much importance to its obviation. This is Amaral's other difference between *emunctus* and *bondensis*. I have not seen the type of *bondensis* (Carnegie Mus. No. 216, Bonda, Colombia), but the description offers no differential characters, and Amaral, who saw it, regards it as conspecific with four Panamanian specimens which I have seen. I therefore regard both *emunctus* and *bondensis* as synonyms of *albirostris*.

There are therefore two species (*not five*) of Helminthophis in Central America.

Amaral regards *petersii* from Ecuador as synonymous with *emunctus* (=*albirostris*). I am not so certain of this, as Boulenger's figure of *petersii* shows the ocular in contact with the frontal, which is not the case in any of the specimens I have seen.

I am inclined to follow Peters and Jan in considering the two Central American species as of different genera, because I think they typify significant stages in the degeneration of the head scales from Anomalepis to Typhlops. *Frontalis* (with two allies) has the prefrontals meeting in the mid-dorsal line back of the rostral. In *albirostris* this is not the case and that species is like Typhlops save that the prefrontals are separate from the upper nasals. In Typhlops the prefrontal and upper nasal are fused into one large scale.

Synonymies and localities for the two species follow.

Helminthophis Peters (1860, Mon. Berl. Acad. p. 517; type *frontalis*).

Helminthophis frontalis Peters (*Typhlops* (*Helminthophis*) *frontalis* Peters 1860, l. c.)

C. R.: No locality, Berlin 3925 TYPE, Berlin 3823; San Jose, E. R. Dunn.

Pan.: Boquete, Michigan, 57934.

Liotyphlops Peters.

(1881, Sitz. Ges. Nat. Fr. Berlin, p. 69, type *albirostris; Rhinotyphlops* Peters 1857, Mon. Berlin Ak. p. 402, type *albirostris*, not Rhinotyphlops Fitzinger 1843, Syst. Rept. p. 24, type *lalandii*.

Liotyphlops albirostris (Peters). (*Rhinotyplops albirostris* Peters 1857, l. c.; *Typhlops* (*Idiotyphlops*) *emunctus* Garman 1883, Mem. Mus. Comp. Zoöl. 8, 3, p. 3; *Helminthophis canellei* Moquard 1903, Bull. Mus. Hist. Nat. 9, p. 212.)

C. R.: No locality, Frankfort 7005a.

Pan.: No locality, M. C. Z. 3971 type *emunctus*, Paris 3189A type *cancellei*, U. S. N. M. 37009, 61989, 82115, Vienna (1), E. R. Dunn (2); Veragua, Berlin 9529 (2) types *albirostris;* Chiriqui, Berlin 8656, U. S. N. M. 23748; Ancon, M. C. Z. 17849, U. S. N. M. 60517; San Miguel I., M. C. Z. 10714.

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TWO NEW SUBSPECIES OF LIZARDS OF THE GENUS LEIOCEPHALUS FROM HISPANIOLA.

BY DORIS M. COCHRAN.

The distinguishing of the precise degree of relationship between the Leiocephali known to occur on Hispaniola has been a task of some difficulty. Due to the scarcity or absence of adequate material from much of the southeastern and south central part of the island, the survey of all the different forms is probably not even now complete, since careful collecting in the future will undoubtedly reveal still other forms more or less distinct from those already known.

In order to make these relationships clear, I have drawn up a key to all the known Leiocephali from Hispaniola, including the two new subspecies described below.

KEY TO SPECIES OF LEIOCEPHALUS IN HISPANIOLA AND ADJOINING ISLETS.

a^1. A distinct lateral fold; four scales between rostral and supraocular ring.
  b^1. Sides of neck behind ear covered with small, sharply granular scales; body scales relatively very small ..... *L. schreibersii*
  b^2. Sides of neck behind ear covered with scales keeled and imbricated like the dorsals; body scales relatively large ..... *L. melanochlorus*
a^2. No lateral fold; three scales between rostral and supraocular ring (*Leiocephalus personatus* group).
  b^1. Frontals and prefrontals smooth.
    c^1. Frontals usually in contact with canthals; throat immaculate ..... *L. p. semilineatus*
    c^2. Frontals usually separated from canthals by a wedge-shaped scale; throat heavily spotted with brown ..... *L. p. barahonensis*
  b^2. Frontals and prefrontals ridged.
    c^1. Throat, chin, lips and sides of head solid black in the adult male ..... *L. p. personatus*
    c^2. Throat not solid black in the adult male.
      d^1. Hind leg reaching to between shoulder and ear .. *L. p. scalaris* N.S.S.

d^2. Hind leg reaching to between ear and eye.

e^1. Scales relatively larger, 10–14 in a head length in the adult.

f^1. Mental shield of adult male solidly edged with black..... *L. p. mentalis* N.S.S.

f^2. Mental shield not solidly edged with black..*L. p. beatanus*

e^2. Scales relatively smaller, 14–16 in a head length in the adult. *L. p. vinculum*

Leiocephalus personatus mentalis, new subspecies.

1887. *Liocephalus personatus* GARMAN, Bull. Essex Inst., vol. 19, p. 49, extr. p. 25 (part) (Puerto Plata, M. A. Frazar, coll.).

1914. *Leiocephalus personatus* BARBOUR, Mem. Mus. Comp. Zool., vol. 44, No. 2, p. 302 (part) (Puerto Plata).—? SCHMIDT, Bull. Amer. Mus. Nat. Hist., vol. 44, art. 2, 1921, p. 14 (Monte Cristi, Puerto Plata, Sanchez, Sabaneta).—COCHRAN, Proc. U. S. Nat. Mus., vol. 66, art. 6, 1924, p. 10 (Jovéro).

Diagnosis.—Mental shield and lower lips of adult males sepia; remainder of throat pale china blue, immaculate or with a few very minute pale brown spots confined mostly to single scales; sides of head from tip of snout to above the ear sepia, with one or two large pea-green spots below the eye; sometimes a small brown spot just behind the ear; prefrontals seldom touching the canthals; 22–26 lamellae on the fourth toe; hind leg adpressed reaches to the eye or to between ear and eye; 54 to 62 scales between the occiput and the tail, not highly mucronate or noticeably bristling.

Description of the type.—U. S. N. M. No. 65772, an adult male from Jovéro, Dominican Republic, collected on Feb. 19, 1923, by Dr. W. L. Abbott. Headshields enlarged, the posterior distinctly ridged, the anterior more faintly; three scales (an internasal and 2 prefrontals) between the rostral and the supraorbital ring; posterior prefrontals much the larger; nasals in contact with rostral; internasals somewhat elongate, barely separated from each other by the first of the series of three medial scales; prefrontals separated from the canthals by a relatively large wedge-shaped scale; two heavy rounded canthal scales followed by three long and narrow superciliaries and two small terminal ones; six distinctly ridged supraoculars separated from the superciliaries anteriorly by 2 rows of small keeled scales and posteriorly by but one row, and from the frontals by a single row; occipital small, bordered by two distinct pairs of parietals on each side; the inner about four times the size of the occipital and a little larger than the outer; an enlarged latero-nuchal scale beyond the outer parietal which is almost half its area; four upper and five lower labials to a point below the center of the eye; temporal scales increasing gradually in size, the last one, just above and in front of the ear, the largest and most conspicuous; anterior border of the ear with five coarse projecting scales, the middle ones the largest. Dorsal scales large, imbricate and moderately mucronate; laterals considerably smaller than the dorsals; ventrals equal to or slightly larger than the dorsals, smooth, their posterior edges denticulate; about 50 scales

around the middle of the body; about 56 scales from the occiput to a point directly above the vent, about 14 dorsal scales the equivalent of the distance from snout to occiput; nuchal scales small, those on the sides of the neck like the dorsals, those behind the ear keeled and imbricate, not granular. Shoulder folds present; no lateral folds. The adpressed hind limb reaches to half-way between the ear and the eye. Digits compressed; the fourth toe with 24 tricarinate lamellae. A distinct crest beginning on the occiput, equally developed on the back and on the proximal portion of the tail but decreasing as the tail tapers; the other caudal scales keeled and mucronate; no verticils. The keels of the lateral and dorsal scales are directed upwards and backwards so that the scale-rows converge strongly on the back. Tail highly compressed. A pair of enlarged post-anals in the male.

Dimensions.—Snout to vent, 64 mm.; head to posterior ear, 16.5 mm.; tail, 92 mm.; fore leg, 25 mm.; hind leg, 48 mm.; width of head, 13 mm.

Color in alcohol.—Body color sage green above, pale china blue to Nile blue below; very faint indications of sepia crossbars on the nape of the neck; the body-scales above and below the light dorsolateral line with sepia posterior borders, darker towards the center of the back than on the sides of the body; tail with faint indications of sepia crossbars at regular intervals; limbs without bars or spots, but each scale having a powdering of minute sepia spots on its posterior margin; mental shield and lower lips sepia; remainder of throat pale china blue with a few very minute pale brown spots confined mostly to single scales; sides of head from tip of snout to above the ear sepia, with two large pea-green spots below the eye; a small brown spot just behind the ear; top of head olive, with irregular darker markings on most of the scales.

Variations.—As to the numbers of prefrontal scales, this species invariably has two. The median snout scales are three in most cases, usually in a single median series, the anterior the smallest and ordinarily separated from the rostral. Sometimes two scales lie side by side, making four and rarely five in the median series.

The supraoculars are six in nearly all cases, although sometimes seven and rarely five are to be counted. The prefrontals usually do not touch the canthals, but sometimes on one side of the head they may do so, while in one instance they touch on both sides. The dorsal scales counted parallel to the dorsal crest from occiput to the beginning of the tail vary between 54 and 62, while from 13 to 15 scales equal the distance between occiput and tip of snout in the adult and from 16 to 17 scales in the young. The scales around the body range approximately between 43 and 52, but the slanting of the scale-rows and the interpolation of new ones makes it nearly impossible to get the same count twice in succession on one individual.

The subdigital lamellae are 22 to 26, usually 23. The ratio of the length of the hind limb compared to the total length of the head and body varies of course with the age and sex of the specimen being studied. Two very young ones obviously just out of the egg, both measuring 27 mm. in combined length of head and body, have the hind legs 85% of that length. The largest adult measuring 83 mm. in length has a hind leg ratio of 72%.

In individuals of the same approximate size, the relative length of the hind limb varies as much as 18%; in the specimens measuring from 50 mm. up to the maximum of 83 mm., the hind leg is anywhere from 67% to 85% of that length, the average being 76% in four specimens. In every case, however, the adpressed hind limb reaches at least as far as the anterior border of the ear, and in most cases to between the ear and the eye, and even occasionally as far as the eye itself.

The coloration of adult males is quite uniform. There is an almost total reduction of body pattern, while in contrast to this is the brilliant pattern of dark and light on the lips. The mental shield in all cases is black on the upper border in adult males although the females and young are often nearly immaculate in this region. The top of the head in males is olive-brown, often with darker sepia spots at the posterior supraocular region and on the temporals, and sometimes with light round dots especially concentrated along the canthus and superciliary border. The females and young show a pattern quite similar to that of young *personatus* but slightly coarser. The spots on the throat and chest tend to be arranged in longitudinal series, while on the belly, when they are present, they assume a transverse arrangement towards the sides, as a continuation of the dark spots which usually show in the dark lateral band.

List of Specimens of *Leiocephalus personatus mentalis.*

U.S.N.M.			
10262–4, 10266, 10269, 10271	Puerto Plata, Dominican Republic	1878	C. A. Fraser
65770–1	Jovéro, Dominican Republic	Feb. 1, 1923	W. L. Abbott
65772	Jovéro, Dominican Republic	Feb. 1, 1923	W. L. Abbott Type of *L. p. mentalis*
65773	Jovéro, Dominican Republic	Feb. 1, 1923	W. L. Abbott
65774	Samaná and Laguna, Dominican Republic	Mar., 1923	W. L. Abbott
65775–9	Jovéro, Dominican Republic	Feb. 6, 1923	W. L. Abbott
66694–707	Jovéro, Dominican Republic	1923	W. L. Abbott
66708–9	Jovéro, Dominican Republic	Nov. 30, 1923	W. L. Abbott
66710–1	Guarabo, Dominican Republic	Nov. 21, 1923	W. L. Abbott
66712	Jovéro, Dominican Republic	Nov. 30, 1923	W. L. Abbott
66764	Samaná Peninsula, Dominican Republic	1923	W. L. Abbott
M.C.Z.			
5443 (2 spec.)	Puerto Plata, Dominican Republic	----------	M. A. Frazar
13679–91	Sosúa, Dominican Republic	1916	J. L. Peters

Leiocephalus personatus scalaris, new subspecies.

Diagnosis.—Color pattern somewhat similar to that of *L. p. mentalis* but less definite; 20–24 lamellae on the fourth toe; adpressed hind leg of the adult reaches between ear and shoulder, very rarely in front of ear; 57 to 64 very spinose dorsal scales between occiput and beginning of tail; occipital scale usually much reduced in size and pushed forward so that the inner parietals are in nearly complete contact with each other.

Description of the type.—U. S. N. M. No. 74054, an adult male from Cap-Haïtien, Haiti, taken by A. J. Poole from March 3 to 6, 1928. Head shields enlarged, ridged excepting those bordering the rostral; three scales (an internasal and 2 prefrontals) between the rostral and the supraorbital ring; posterior prefrontals much the larger; nasals in contact with rostral; internasals somewhat elongate, in contact narrowly with each other behind the rostral; internasals, prefrontals and anterior parts of the frontals embracing a median series of three contiguous scales; prefrontals separated from the canthals by a relatively large wedge-shaped scale; two heavy rounded canthal scales followed by three long and narrow superciliaries and two small terminal ones; six (on one side five) distinctly ridged supraoculars separated from superciliaries and from frontals by a row of small keeled scales; occipital exceedingly small, lying at the anterior border of the inner parietals but scarcely shortening their suture, and not distinguishable from the surrounding scales except by its position; the inner and outer parietals approximately equal in size; no conspicuously enlarged latero-nuchal scales; four upper and four lower labials to a point below the center of the eye; temporal scales increasing gradually in size, the last one just above and in front of the ear being the largest and most conspicuous; anterior border of the ear with four rather short projecting scales. Dorsal scales relatively smaller than in the allied forms, imbricate and highly mucronate, the length of the spiny scale-tips giving to the animal a very bristling appearance; laterals as large as dorsals; ventrals larger than either dorsals or laterals, smooth, their posterior edges denticulate; about 46 scales around the middle of the body; about 64 scales from the occiput to a point directly above the vent; about 14 dorsal scales the equivalent of the distance from snout to occiput; nuchal scales small, those on the sides of the neck like the dorsals, those behind the ear keeled and imbricate, not granular. Shoulder folds present; no lateral folds. The adpressed hind limb barely reaches the ear. Digits compressed, the fourth toe with 22 tricarinate lamellae. A very prominent dorsal crest beginning on the occiput, the sharply pointed elongate scales about equally developed along the back and on the distal portion of the tail, then decreasing; the other caudal scales keeled and very highly mucronate; no verticils. The keels of the lateral and dorsal scales are directed upwards and backwards, so that the scale-rows converge strongly on the back. Tail highly compressed. A pair of enlarged post-anals in the male.

Dimensions.—Snout to vent, 75 mm.; head to posterior ear, 17 mm.; tail defective; fore leg, 27 mm.; hind leg, 57 mm.; width of head, 13 mm.

Color in alcohol.—Body color dull sage green above, glaucous blue to china blue below; a wide light dorsolateral stripe; another similar light

lateral stripe from axilla to groin; indications of sepia crossbars on the nape of the neck; the body-scales above and below the light dorsolateral line with sepia posterior borders, and sometimes the upper half of each scale dark also; tail with faint indications of sepia crossbars at regular intervals; limbs sage green, without bars or spots; the lower lip spotted with triangular sepia markings which coincide with the sutures between the lower labials; mental plate edged anteriorly with sepia; a few sepia spots along the chin below the labials; the remainder of the throat immaculate china blue; sides of head from tip of snout to a little above and behind the ear sepia, with two or three pale cream spots on the upper lip, the last of these continuing backwards to the ear and fading out as a light streak a little way behind the ear; top of head olive; the rostral and internasals and nasals sepia; a sepia spot between the posterior prefrontals and an indistinct marking of the same hue on the frontals and supraoculars.

Paratypes.—U. S. N. M. Nos. 74047–53, 74055–74, all from the same place and collected on the same date as the type specimen.

Variations.—The species under consideration, like the others of its group in Haiti, has two prefrontals. The medial series of scales on top of the snout are most often three in number, although two, four and even five are known to occur. Supraoculars are usually six, although some individuals have but five. The dorsal scales counted from the occiput to the beginning of the tail range from 57 to 66 in number, while around the body there are from 41 to 49 uneven diagonal rows. There are usually 14 or 15 dorsal scales in the distance from tip of snout to occiput; exceptional specimens have 12 and 13 up to 17 scales in that distance. The subdigital lamellae are from 20 to 24 in number, with 23 occurring most often.

The proportion of the head and body to the length of the hind leg is between 60% and 79% in the lizards above 50 mm. in length, the average leg length being 72% of the head and body in eighteen cases. The hind leg when adpressed very seldom reaches beyond the anterior border of the ear, and most often falls considerably behind the ear, while sometimes it just reaches the shoulder. In five lizards under 43 mm. in length the leg proportion averaged 75.4%.

While the coloration of *L. p. scalaris* strongly resembles that of *L. p. mentalis* in a general way, yet the specific differences, in adult males at least, are well marked. The latter subspecies has the very dark patch on the side of the head ending sharply at the upper border of the ear or a scale or two behind it, while there is no distinct dark lateral stripe continuing backwards from it. In the former subspecies the dark area on the side of the head is rather ill-defined, although behind the ear it may be seen to merge with the dark lateral stripe, which remains more or less distinct in the adult. The heavily mucronate body scales of *scalaris* give it a much more bristling aspect than is the case with the much sleeker *mentalis*. Both species have a similar pattern on the mental and labials, and the relation between them seems to be rather close, although the short hind leg and more mucronate scales of *scalaris* separate it readily from its ally. The young, however, are practically indistinguishable. None but the original series has as yet come to hand.

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TWO NEW LIZARDS FROM HISPANIOLA.

BY DORIS M. COCHRAN.

The excavation of cave deposits in Haiti by members of the United States National Museum has resulted among other things in the discovery of rich accumulations of bones of extinct mammals and birds. The collecting of living animals, especially reptiles and amphibians, was more or less an incidental activity to the excavators, although it has proved to be important herpetologically in several instances. The limestone caves of Samaná Bay in the Dominican Republic yielded a remarkable new *Sphaerodactylus* as proof of the collecting skill of Mr. Gerrit S. Miller, Jr. At his instigation and direction excavations on Gonave Island were undertaken in 1929 by Mr. A. J. Poole and Mr. Watson M. Perrygo, and of the several kinds of lizards they secured there one merits subspecific separation from the recognized form common on the mainland of Hispaniola.

Sphaerodactylus samanensis, new species.

Diagnosis.—Dorsals imbricate; no differentiated middorsal zone; dorsals keeled, 7 or 8 (in adults) in standard distance; scales of posterior malar region faintly keeled; scales of gular region, chest and belly smooth; body with six wide clove-brown bars arranged in pairs, the interscapular pair enclosing two white spots; a dark frontal spot usually present; occiput usually crossed by two dark crescentic markings.

Type.—U. S. N. M. No. 74970, an adult male from Boca del Infierno, Samaná Bay, Dominican Republic, collected on February 28, 1928, by Gerrit S. Miller, Jr.

Description of the type.—Snout moderately short and broad, its length about twice the diameter of the eye; eye slightly nearer ear than tip of snout; rostral large, with a median groove behind; nostril between rostral, one large supranasal, two postnasals and the first supralabial; supranasals broadly in contact behind the rostral; superciliary spine moderate in size; three large supralabials, the third longest and extending past the center

of the eye, followed by a very minute fourth supralabial not much larger than the granules surrounding it; three infralabials, the first much the largest; head above with granular, distinctly keeled, non-imbricating scales which are conspicuously enlarged on the snout; scales of back large, keeled, tectiform, imbricating, about eight equalling the distance from tip of snout to center of eye, not perfectly uniform in size and shape, the large ones not extending forward beyond the shoulders; no middorsal granular zone; mental large, followed by two enlarged postmentals; scales of gular region very small, smooth, imbricate; scales below the posterior infralabials and on posterior malar region larger, faintly keeled, juxtaposed; scales of chest and belly smooth, rounded, slightly smaller than dorsals, about nine ventrals to the standard distance; scales of limbs enlarged, keeled and imbricate above, smooth below, very small posteriorly; 13 smooth lamellae under the fourth toe; scales of tail large, faintly keeled, imbricating, very irregular in size and shape above, without definite whorls but enlarged into smooth transverse and fairly regular plates below.

Dimensions.—Head and body, 27 mm.; tail, 25 mm.; width of head, 5 mm.; tip of snout to ear, 7 mm.; fore leg, 7 mm.; hind leg, 10 mm.

Coloration in alcohol.—Upper surfaces sepia; body with six wide, clove-brown bars arranged in pairs, the anterior pair between the shoulders and enclosing two very conspicuous round white spots; tail with about eight transverse, unpaired, irregular, clove-brown crossbars; under parts pale drab, with cloudings of sepia on the throat and sides, and a few larger sepia spots beneath the tail; limbs sepia with a few scattered clove-brown dots above. Head sepia, lightening towards the snout.

Paratypes.—Three additional specimens, U. S. N. M. Nos. 74971–74973, come from the same locality and bear the same data as does the type.

Variations.—One of the paratypes has slightly larger dorsals—seven in the standard distance—than is the case in the type. The only immature individual has about 10 dorsals to the standard distance. The subdigital lamellae vary from 11 to 13. The only variation in the head plates comes in the shape and size of the two small post-nasals, and in the enlarged scales covering the top of the snout, which are slightly finer in the paratypes than in the type. The largest specimen is 28 mm. from snout to vent; the tail unfortunately is missing.

Judging from the four examples at hand, variation is slight in this species. Color pattern is highly similar in all, but brighter in the paratypes, and with two black crescent-shaped marks covering the occiput, and a large round frontal spot which gives off a black median line which goes forward to the rostral.

Relationships.—The new species seems to be intermediate between *Sphaerodactylus richardsonii* of Jamaica, and *S. macrolepis* found widely distributed in Mona, Vieques and Porto Rico as well as on some of the islands lying to the east of Porto Rico.

In coloration the new species is very close to *richardsonii*. The cross-bars are even more pronounced than they appear in the figure of *richardsonii* (Barbour, Mem. Mus. Comp. Zool., vol. 47, No. 3, 1921, plate 5, fig. 3), but are essentially similar in arrangement. The dark frontal spot, barely

suggested in the figure of *richardsonii*, is very prominent in three of the four examples of *samanensis*, while these three likewise possess two black crescent-shaped marks crossing the occiput. But in *macrolepis*, only a very partial resemblance in pattern may be traced with *samanensis*. There is no dark frontal spot in *macrolepis;* instead, there is a prominent dark occipital spot, which often is bounded by longitudinal markings instead of transverse crescents as in *samanensis*. While the dark interscapular band containing the two white spots is found in both species, *macrolepis* is without the remaining dark paired bars on the body which occur in *samanensis*.

In details of scalation, however, *samanensis* is a little closer to *macrolepis* than to *richardsonii*. In fact, the smaller and more numerous labial plates of the Jamaican species, as well as the extremely small scales on top of the snout, serve at once to separate this species from *samanensis*. The number and proportions of the labial plates in *macrolepis*, however, are almost identical to those in *samanensis*. The supranasals in *samanensis* are larger and in mutual contact in the four examples at hand, although this character may prove to be unstable in this species, as it is known to be in *macrolepis*. The true difference between the two species is apparent on examining the dorsal scales. Not only are the enlarged dorsal scales appreciably smaller in *samanensis*, but they extend only as far forward as the shoulders, while in *macrolepis* they appear on the nuchal region, and give way to granular scales just behind the occiput itself.

Anolis dominicensis caudalis, new subspecies.

1928. *Anolis distichus* (not of Cope) COCHRAN, Proc. Biol. Soc. Washington, vol. 41, Mar. 16, 1928, p. 54 (Pte. à Raquette, Gonave Island).

1930. *Anolis dominicensis* (not of Reinhardt & Lütken) BARBOUR, Bull. Mus. Comp. Zool., vol. 70, No. 3, Apr. 1930, p. 123 (Gonave Island).

Diagnosis.—Obviously close to *dominicensis* from the mainland of Hispaniola but distinguished from it by having a black shoulder patch bordered above and below by parallel light stripes, the lower continuing from below the ear to beyond the axilla; in having larger scales on the tail and a less pronounced scalloping of the crest; in not usually having a large pre-occipital, and finally in having on the average more scales in the median patch just anterior to the junction of the supraorbital semicircles.

Description of the type.—U. S. N. M. No. 76801, a male from En Café, Gonave Island, collected in March, 1929, by A. J. Poole and W. M. Perrygo. Head short, with two short and very weakly developed frontal ridges diverging forwards and becoming indistinct at a third of the distance from the eyes to the end of the snout; forehead slightly concave between these ridges; headscales smooth; rostral very low, narrower than the mentals; four to six scales between the nostrils, the inner two of these scales the foremost in a paired median series of rather rectangular, somewhat enlarged scales which are in contact as far as the concave region in front of the eyes where the series separate to enclose a patch of about 8 irregular scales; three scales of the supraorbital semicircles in contact behind this patch; occipital a little larger than the ear-opening, shield-shaped, barely in con-

tact with the supraorbital semicircles; no conspicuously enlarged preoccipital; supraocular disk composed of six large, smooth, polygonal scales, separated from the semicircle by a row of scales reduced in size but not granular; one or two fairly large scales bordering the inner anterior edge of the superciliary, and separated from the supraocular disk by smaller scales; the scales in front of the supraocular disk all small but not granular; true granular scales behind the supraocular disk; canthus rostralis only moderately developed, the four enlarged scales which distinguish it distinctly keeled, projecting only slightly over the loreal region; superciliary ridge completely continuous with the scales of the canthus rostralis, composed of one very elongate and sharply keeled scale followed by a double series of small but differentiated tubercular scales, the anterior of which are separated from the supraocular disk by three or four rows of granules; loreal rows four; subocular semicircle keeled, broadly in contact with the upper labials; supralabials eight, the sixth directly below the center of the eye, the last two very small; temporal granules somewhat smaller than the median dorsals, with a double series of small scales forming the supratemporal line; back and sides covered with granules, the dorsals a little larger and flatter, the laterals smaller and more tubercular; median dorsals only slightly larger than the rest of the dorsal granules; ventrals small, smooth, scarcely imbricate posteriorly, hexagonal, longer than broad; throat covered with small flat granules; forelegs covered with small smooth granules, about three series on the anterior face of the lower arm being greatly enlarged, more than twice as large as the largest ventrals; anterior scales of femur and tibia smooth, similarly enlarged, gradually diminishing posteriorly and below; scales covering hands and feet above perfectly smooth; digital expansion wide, about nineteen lamellae under second and third phalanges of fourth toe, about thirty-one under the whole toe; tail moderate, compressed, with very well-marked verticils consisting of vertical series of large squarish scales which are quite truncate at the tips, separated by five or six rows of slightly smaller scales on the sides of the tail; a slightly serrate crest on the tail, with four triangular, keeled and pointed scales, the first and fourth slightly smaller than the others which are subequal and the whole four corresponding to a verticil; skin of gular fan naked, set with distant series of flat crescent-shaped scales a little longer but much narrower than the ventrals; edge not thickened posteriorly; post-anal scales well developed. A nuchal fold, diminishing on the shoulders; a strong dorsal fold.

Dimensions.—Head and body, 41 mm.; tail defective; snout to posterior ear, 13 mm.; snout to center of eye, 8 mm.; width of head, 8 mm.; fore leg, 21 mm.; hind leg, 34 mm.

Color (in alcohol).—Above dark mouse gray; a slate-black elongate patch from ear to behind the shoulder, bordered below by a light stripe which begins below the ear and continues to beyond the axilla; above the black patch a similar light stripe parallel to the first, and beginning above the ear and fading out between the shoulders; a faint pale area on each side of the nuchal region; limbs and tail olive above, with dark sepia bars; lower surfaces immaculate olive buff excepting the throat which is heavily marbled with smoky gray, the skin of the gular fan being of the same hue.

Variation.—There may or may not be a median dorsal skin fold, depending upon the preservation. It is never very large, even at its best. In only one out of the ten Gonave Island lizards belonging to the U. S. National Museum is there a single large pre-occipital;—the others have from 2 to 6 small scales anterior to the occipital. Seven out of these ten have from five to eight small scales in the median group anterior of the junction of the supraorbital semicircles; there are four scales in two of the individuals, and two scales in only one individual. Thus the average seems to be considerably higher than in the mainland *Anolis dominicensis*, where two scales is the most constant condition. There are five crest scales to each verticil of the tail in the type of the new species, but the other six males in the national collection have only four scales, the first and fourth of which are only slightly smaller than the other two. There are but seven vertical lateral rows to a whorl in all but one specimen, which has eight. A direct comparison of the tails of Gonave Island and Hispaniolan lizards makes it at once evident that the former have much more coarsely scaled tails than do the latter, while there is less pronounced scalloping due to the greater uniformity of the crest scales.

The conspicuous black shoulder-patch set off by light lines above and below is apparently a constant feature of Gonave Island lizards, since every specimen shows the markings to varying degrees, even the females and young.

When I examined the Eyerdam specimens collected for the Museum of Comparative Zoology, I failed to attach sufficient importance to the slight variations noted in those particular specimens, which were the only ones from Gonave that I had seen at that time. The subsequent discovery by Dr. A. Wetmore of a distinct subspecies on Beata Island brought about a re-examination of the status of the Gonave Island form, while fresh material from different sources gave proof of the validity of its color pattern and of the arrangement of its caudal scales.

List of specimens of *Anolis dominicensis caudalis.*

U.S.N.M.			
76799–800	En Café, Gonave Id.	Mar. 1929	A. J. Poole & W. Perrygo
76801	En Café, Gonave Id.	Mar. 1929	A. J. Poole & W. Perrygo Type of *A. d. caudalis*
77080–2	Pte. à Raquette, Gonave Id.	1927	W. J. Eyerdam
80386–9	Anse à Galets, Gonave Id.	Mar. 23, 1930	L. H. Parish & W. Perrygo
80390	Petite Gonave Id.	Mar. 23, 1930	L. H. Parish & W. Perrygo
M.C.Z.			
13783–9	Gonave Id.	1919	G. M. Allen
25509–18	Pte. à Raquette, Gonave Id.	1927	W. J. Eyerdam
29046–50	Anse à Galets, Gonave Id.	Feb. 10, 1929	T. Barbour

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PROCEEDINGS

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A NEW SNAKE, *IALTRIS PARISHI*, FROM THE REPUBLIC OF HAITI.

BY DORIS M. COCHRAN.

A remarkable new species of the supposedly monotypic genus *Ialtris* was secured in 1930 in the southwestern peninsula of Haiti by Mr. Lee H. Parish and Mr. Watson M. Perrygo. It differs considerably from the known form, *Ialtris dorsalis*, in color pattern and in scale formula, and furnishes one more proof of the great value of intensive collecting in the parts of Haiti seldom or never visited by competent zoological expeditions. It gives me great pleasure to name this new species for Mr. Lee H. Parish, whose enthusiasm for scientific exploration made the expedition possible.

Ialtris parishi, new species.

Description of the type.—U. S. N. M. No. 80773, a male from ten miles east of Baradères, Haiti, collected on April 7, 1930, by Lee H. Parish and Watson M. Perrygo. Head very broad and depressed, greatly swollen through the temporal region; rostral one and one-half times as broad as deep, scarcely visible from above; internasals longer than broad, as long as the prefrontals; frontal one and one-half times as long as broad, equal to its distance from the end of the snout, much shorter than the parietals; loreal rectangular, small, a little longer than deep; one preocular not reaching the frontal; two postoculars, the lower slightly the larger; temporals 1 + 2, the uppermost of the second temporal series considerably enlarged; seven upper labials, the third and fourth entering the eye; nine lower labials, the fifth the largest, the first four in contact with the anterior chinshields, which are a little shorter than the posterior ones. Scales in 19 rows, with two pores quite distinctly visible near the tips; ventrals 163; anal divided; caudals 67 plus the tip, which is missing.

Coloration.—Body color above sepia, changing to cinnamon on the snout and lips; head immaculate above; a very conspicuous white line narrowly edged above and below with black emanating from the lower posterior border of the eye and passing diagonally backwards to the commissure of

the mouth, bisecting the two last upper labials; on the body 45 cinnamon crossbars about 1 scale in length and edged posteriorly with a ragged dark border which is especially emphasized towards the outer ends of the bars, which do not extend below the fourth scale row; on the tail and posterior body the bars dorsally are definitely broken up, leaving alternating lateral spots of cinnamon irregularly pervaded with black; ventral surface buff-pink, the outer ends of the scales heavily powdered with gray dots; two very irregular mid-ventral series of squarish patches likewise composed of gray dots, and tending to run together into parallel stripes towards the end of the body; labials and chin with a heavy powdering of very pale gray dots which tend to become more numerous around the borders of the chin-shields.

Remarks.—This second known species of the genus has a grooved fang exactly like that of *Ialtris dorsalis*. It can not be said to resemble *dorsalis* very closely, inasmuch as the coloration is very different and the number of ventrals is considerably less in the new species. The flatness and width of the head of the type suggested an adult *Alsophis anomalus* at first glance, but the teeth are utterly different.

The headplates of the new species are quite similar to those of *dorsalis*, excepting that the frontal is shorter in proportion to its width in the former. The white diagonal line bordered with black above and below leading backwards from the eye in *parishi* is represented in *dorsalis* by the wide black streak that forms the outer stroke of the W-shaped head marking, but which in *dorsalis* does not drop to the commissure of the mouth.

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A NEW FROG, *ELEUTHERODACTYLUS WETMOREI*, FROM THE REPUBLIC OF HAITI.

BY DORIS M. COCHRAN.

A small collection of reptiles and amphibians from Haiti, secured in 1927 by Dr. Alexander Wetmore of the United States National Museum while travelling on funds provided for zoological collecting by the late Mr. B. H. Swales, has already yielded a genus of Anguid lizards[1] new to science, and a new species of *Chamaelinorops*,[2] a genus formerly known only from Navassa. The frog described below I recognized as being distinct at the time these other new forms were being studied, but as the specimens were not in a good state of preservation, its description was put off in the hope that fresh material from the type locality could be obtained. It seems unlikely that such material will be forthcoming, therefore the following description has been drawn up. It is a pleasure to name the species for its collector.

Eleutherodactylus wetmorei, new species.

Diagnosis.—Belly granular; no spinelike tubercle on upper eyelid; toes and fingers very slightly webbed, rounded at the tips; head moderate; snout normally rounded in profile; tibio-tarsal articulation reaching to posterior corner of eye; vomerine teeth in 2 oblique groups behind and between the choanae; thigh and groin heavily marked with dark blotches on a pale ground.

Type.—U. S. N. M. No. 72617, an adult from Fonds-des-Nègres, Haiti, taken by Dr. A. Wetmore on April 5, 1927, from the nest of a palm-chat, *Dulus dominicus*, together with two tree-toads, *Hyla dominicensis*.

Description of the type.—Tongue broad, apparently not emarginate

[1] A new genus of Anguid Lizards from Haiti. Proc. Biol. Soc. Washington, vol. 40, June 30, 1927, pp. 91–92.

[2] A new species of *Chamaelinorops* from Haiti. Proc. Biol. Soc. Washington, vol. 41, Mar. 16, 1928, pp. 45–47.

behind; vomerine teeth in two long oblique groups some distance behind the choanae, their outer ends not extending beyond the inner borders of the choanae; head moderate, without ridges; no apparent subgular pouch; nostril much nearer tip of snout than eye, its distance from the eye slightly exceeding the diameter of the latter; upper eyelid much narrower than interorbital space; tympanum equal to one-half the diameter of the eye, its distance from the eye somewhat less than its own diameter; disks of fingers large, that of first finger equal to about three-fourths the area of the tympanum; first finger shorter than second; toes with a vestige of a web at the base; disks of toes moderate, slightly smaller than those of the fingers; subarticular tubercles well-developed; apparently a very small inner and a still smaller outer metatarsal tubercle; plantar tubercles weak; apparently no tarsal fold; the bent limbs being pressed along the sides, knee and elbow overlap; the hind limb being adpressed along the sides, the tibio-tarsal articulation reaches the posterior corner of the eye; the hind limbs being placed vertically to the axis of the body, the heels overlap considerably; apparently no series of elongate glands either above the tympanum or forming a dorsolateral fold; skin very faintly shagreened above; throat and breast smooth; a coarsely granular patch of skin between the thighs posteriorly, the granules apparently occurring also in the skin of the belly.

Dimensions.—Tip of snout to vent, 35 mm.; width of head, 15 mm.; tip of snout to posterior border of tympanum, 12 mm.; diameter of eye, 4 mm.; diameter of tympanum, 2.5 mm.; fore leg from axilla, 21 mm.; hind leg from vent, 53 mm.; vent to heel, 32 mm.

Color (in alcohol).—The ground color has badly bleached and altered, due to poor preservation, and appears now as a pale olive-buff. The color pattern is very distinct, however, and is unlike that of any other known *Eleutherodactylus* from Hispaniola. A broad pale band between the eyes is emphasized posteriorly by a narrow brown irregular line caused by the grouping of small brown dots which thickly cover the upper anterior parts of the body, the snout and forelegs, less thickly on the posterior parts and hind legs. The back of the thighs is strongly marked by very characteristic coarsely-reticulated dark brown blotches on a very light background. A few similar blotches appear on the front of the thigh and on the sides near the groin. The entire lower surface appears to be immaculate olive-buff. The sides of the snout and head are thickly peppered with small brown dots which are not arranged in any definite pattern.

Variation.—There are three other specimens of this species (U. S. N. M. Nos. 72618–20) with the same data as the type, but in even poorer condition. They all show the perfectly distinctive dark blotches on the back of the thigh and in the region of the groin. One of these, 72619, shows a brown semicircular line bordering the upper part of the tympanum on what appears to be a faint glandular ridge. The interocular light band may also be plainly seen on this frog. The other two specimens are devoid of head markings.

In 72620, a small individual somewhat less shriveled than the type, the disk of the third finger very nearly covers the tympanum. In 72619 only

is the granulation of the belly skin very apparent, the other specimens having suffered considerably in the mutilation of this part of the body. On none of the paratypes can any longitudinal glands or dorsolateral folds be made out, this species evidently being of the smoother skinned ones. The paratypes are all smaller than the type, measuring respectively 28, 29 and 32 mm. from snout to vent.

Fresh material from the type locality will be needed to confirm some of the characters given in the description. In the key, the new form falls nearest to *auriculatoides*, from which it may be readily told by the color pattern of the thighs.

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PROCEEDINGS

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THE STATUS OF TROPIDOCLONION LINEATUM.[1]

BY E. R. DUNN.

The snake known as *Tropidoclonion lineatum* is generally conceded to be a degenerate ally of the genus Thamnophis. It is the purpose of the present article to enquire into that alliance, and also to ascertain to which of the four groups of Thamnophis, as outlined by Ruthven, *lineatum is* allied.

The generic differences between *lineatum* and the species of Thamnophis are said to exist in the following features: the maxillary dentition; the condition of the scales around the nostril; the number of labial plates; and the form of the hemipenis.

The maxillary dentition of *lineatum* consists of 15 teeth, slightly and gradually increasing in size posteriorly. I find 15 teeth in *Thamnophis butleri* and 14 in *T. ordinoides ordinoides*. The last two teeth are significantly, even if only slightly, larger in the two latter. But several species, which are now assigned to Thamnophis, were recorded by Cope as having the maxillary teeth equal in size.

The nasal plate of *lineatum* is usually perforated by the nostril, and from that orifice there extends a ventral suture so that the scale is semi-divided. I have examined 54 nostrils of *lineatum*, and find 41 with the condition described; 9 have no suture and hence have an entire nasal; 4 have the nasal completely divided. In only one of these is the condition certainly normal, and thus exactly like that in species of Thamnophis, where the nostril is between two scales. But since such variation is found in *lineatum*, the character appears to be of specific, rather than generic, value.

The upper labials of ten *lineatum* from St. Louis are: 5 in six cases, 6 in thirteen cases, and 7 in one case. *Thamnophis ordinoides ordinoides* has been recorded with 5 upper labials, and *Thamnophis radix butleri* with 6.

The lower labials in the same series of *lineatum* were equally 6 or 7. Counts of six lower labials have been recorded for both *butleri* and *ordinoides*.

The hemipenis of *lineatum* is slightly bilobed, and each lobe is tipped with a slim, solid, projection which Cope calls an "awn." In other respects the organ does not differ from that of species of Thamnophis. I have examined

[1]Contribution from the Department of Biology, Haverford College, No. 12.

a number of species of Thamnophis and have found no "awn," but *T. ordinoides ordinoides* and still more *T. ordinoides vagrans* show slight bilobation of the organ.

Tropidoclonion lineatum has a very short tail, and very few subcaudal plates. I find that seven females from St. Louis have 32–37 subcaudals, and three males from the same locality have 38–45. This count is lower than any recorded for Thamnophis but *ordinoides ordinoides* has been found with as few as 50, and *butleri* with as few as 49.

Other characters of *lineatum*, as number of ventrals, number of dorsal scale rows, type of reduction of dorsal scale rows, lack of scale pits, single anal, etc., are identical with those of species of Thamnophis.

In type of coloration, *lineatum* agrees with species of Thamnophis in having three light stripes, and especially with those that have the lateral light stripe on the second and third row of scales.

Ruthven, in his admirable analysis of Thamnophis, has shown that the genus can be divided into four superspecific groups, each of which has its most unmodified member in the Southwest. Each of the four groups consists of a set of vicarious forms, replacing each other in orderly succession, and no two members of the same group occurring together in any one place. Of these four groups, one, the *elegans* group, lacks a representative east of the Great Plains.

Two of the groups show great degeneration in the United States; the *radix* group in its eastern representative *butleri*, and the *elegans* group in its northwestern representative *ordinoides*. I have just shown that the degeneration of *lineatum* is not much greater than that of the two Thamnophis just mentioned.

T. radix butleri occurs with *lineatum;* so do *marcianus* and *radix*, both members of the *radix* group. The lateral stripe is on the third and fourth scale rows in the *radix* group and on the second and third in *lineatum*.

The *elegans* group, with the lateral stripe on the second and third rows (as in *lineatum*) adjoins but does not overlap the range of *lineatum*. The Northwestern member, *ordinoides ordinoides*, shows the extreme of scalation reduction hitherto recognized in Thamnophis. That extreme would be but slightly increased were *lineatum* recognized as the Eastern member of the *elegans* group. I propose that solution, and suggest that the snake in question be known henceforth as *Thamnophis lineatus*. I believe that its relationships, not only to Thamnophis, but to a particular group of Thamnophis, are sufficiently demonstrated. The lack of relationship of *lineatum* to the groups of Thamnophis typified by *proximus*, by *sirtalis*, and by *radix* can be easily shown. The relationship of *lineatum* to the *Thamnophis elegans* group is indisputable. The debatable point as to whether its specific characters entitle it to separate generic rank I leave for others to settle. Believing, as I do, that the classification should reflect the relationships, I had rather see Thamnophis split into four genera, with *lineatum* as a member of one of them, than the present arrangement, with all four groups of Thamnophis as one genus, and a single lone member of one of the groups isolated as a monotypic genus.

The range of *lineatum*, from specimens and records that I have seen, is

from Hughes, Butler Co., Ohio, and Sherwood, Franklin Co., Tennessee, to Fort Chadbourne, Coke Co., Texas, and Cherokee Co., Iowa. Within these limits it is known from Ohio, Illinois, Tennessee, Iowa, Missouri, Kansas, Oklahoma, and Texas. I am inclined to regard the record of Stone in the American Naturalist, in 1910, for Round Island, Clinton Co., Pennsylvania, based on a specimen which was already lost, as probably referring to *Thamnophis radix butleri*, or at any rate as awaiting additional confirmation.

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THE AMPHIPOD *NOTOTROPIS MINIKOI* ON THE EAST COAST OF THE UNITED STATES.

BY CLARENCE R. SHOEMAKER.

Among some amphipods recently brought to the U. S. National Museum from Beaufort, N. C., by Dr. S. F. Hildebrand, occur several very fine specimens of *Nototropis minikoi* (A. O. Walker), which has not, heretofore, been reported from North America. The species was described by Canon A. O. Walker under the genus *Paratylus* from a single specimen taken in 1905 in the lagoon at Minikoi Island of the Laccadive Archipelago. In 1916, Walker again identified this species from material taken on the shore of Copacabana near and outside the harbor of Rio de Janeiro, by Dr. Carlos Moreira, Director, Instituto Biologico de Defesa Agricola, Brazil, and transferred it to the genus *Nototropis*. Dr. Charles Chilton, in 1922, reported it from Carnac Island, West Australia, where three specimens were procured by Dr. E. Mjöberg while on the Swedish Scientific Expedition to Australia, 1910–13. In 1923 Dr. Chilton reported it from Puysegur Point, New Zealand, from one specimen taken by T. B. Smith.

These appear to be all the published records of this amphipod, but by referring to the unidentified material of the genus *Nototropis* in the National Museum collection I am enabled to add several new records and localities for its occurrence. The fisheries steamer *Fish Hawk* in 1903 took a specimen off Carrabelle, Florida, and in 1913 she collected a number of specimens off Cedar Keys Light, Carrabelle Light, and St. Andrews bell buoy, Florida. Specimens were taken off Fishermans Island, Va., in 1916, and off Cape Henry, Va., in 1920 by the *Fish Hawk* during the biological survey of Chesapeake Bay. Dr.

Waldo L. Schmitt, while travelling under the auspices of the Walter Rathbone Bacon Scholarship of the Smithsonian Institution in 1925, took specimens at Ilha Paqueta, and Villa Bella, São Sebastião, Brazil. Dr. J. S. Gutsell, of the U. S. Bureau of Fisheries, procured many specimens by tow net July 20, 1927, off Cape Lookout Bight, N. C. The specimens brought to the Museum by Dr. S. F. Hildebrand were taken at the surface near Fort Macon, off Beaufort, N. C., June 30, 1932.

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PROCEEDINGS
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A PARTIAL STUDY OF THE CANADIAN SAVANNA SPARROWS, WITH DESCRIPTION OF *PASSERCULUS SANDWICHENSIS CAMPESTRIS*, SUBSP. NOV. THE PRAIRIE SAVANNAH SPARROW.

BY P. A. TAVERNER.[1]

For some time it has been suspected that the Savannah Sparrows of middle and western Canada have needed systematic revision and particular efforts have been made by the National Museum of Canada to obtain material to that end. Now, with a considerable series of specimens available, supplemented by selected birds courteously loaned by the Museum of Comparative Zöology and Major Allan Brooks, the following partial study is presented.

A cursory examination shows that the plumage of the species is subject to great variations of wear, irregular as to season. Birds of similar age, sex or season may be quite fresh in plumage or may show an amount of wear that quite obliterates slight racial characteristics. This is probably due to the varying qualities of the grasses of the particular habitat they have been frequenting at the time of taking or immediately previous. In many localities the plumage seems to disintegrate rapidly as soon as nesting duties are under way. This, pronounced in the east, is not quite so marked in the west and mid-west where the sparser grassing of the meadows produces less friction on the feather structure. Another obscuring factor in the east is the general smoked dirtiness of the plumage. Even freshly arrived spring birds and those summering in clean wilds may be, and usually are, heavily coated with a gray soot that largely

[1]Published by permission of the Director, National Museum of Canada, Ottawa.

hides the true coloration. Much of this is probably acquired in winter habitats or in smoky grounds passed through in migration.

Another source of confusion is the fact that the species is an early nester and local pairs may be engaged in nesting while more northern migrants are still passing through. This confuses the picture of breeding distribution, as no bird not actually found breeding can be reasonably assumed to be resident in a locality until well into the summer. Making all possible allowance for these sources of error the following can be derived from the material at hand:

Nova Scotia, northern New Brunswick, southern Quebec and southern Ontario birds are practically uniform and are assumed to be *Passerculus sandwichensis savanna* (Wilson), the Eastern Savanna Sparrow, type locality Savannah, Georgia, and Great Egg Harbor, New Jersey. In the material under review their distinctive character is a general light brownness above. In fresh plumage the edges of the outer scapulars lighten to white which, however, rapidly wears away to traces or disappears altogether. The lores and superciliary lines are lemon yellow, rarely, if ever, paling to white in spring.

Birds from the north shore of the Gulf of St. Lawrence as far west, at least, as the Moisie River; the Labrador; northern Ontario; and James and Hudson's Bays, as far north at least as to the Nastapoka River and Churchill are more or less distinctly darker than the above and are probably summering in clean wilds, and may be referable, at least in part, to *labradorius* Howe, but, since others are investigating these birds, no more need be said about them here.

West of Ontario, however, a progressive change of coloration is noted over the prairies. Barely perceptible in Manitoba, it culminates in decidedly pale birds in Alberta. These are noticeably lighter above, especially across the base of the neck and on the closed wings. The superciliary line averages a little paler yellow and may occasionally be practically white. The bill averages slightly finer and more acute, but too slightly so to dwell upon. In Saskatchewan birds these distinctions are not quite so well marked as they are in those from Alberta and those from Manitoba are so like the eastern ones that their separation is difficult. Conventionally they are treated here with the prairie specimens rather than with those of the eastern woodland country, though it is to be understood that they are really intermediate and only begin to show departure from type.

Birds from the interior of British Columbia are different again. They are as pale generally as the preceding prairie birds, but have a slightly ruddy cast with a suggestion of olive. The eyebrow is a still deeper yellow than in eastern birds and suffuses slightly over the face; which is probably responsible also for a somewhat olive tone on the back. The bill averages rather more attenuate than in birds of the prairies.

All the above average approximately the same size; no consistent difference in this respect, as evidenced by wing length, has been detected. In the southwest corner of the province, and probably intrusively along the southern boundary, occurs a very small bird, not as ruddy as the above, that has hitherto been known as *brooksi* Bishop, but which the fourth edition of the A. O. U. Check-list includes under *nevadensis* Grinnell. Without the material to test the wisdom of this step we must tentatively accept it, though it is remarkable that the bird inhabiting the arid Great Basin and Nevada should be postulated to occur on the humid coast of British Columbia. This same small bird has been detected breeding in limited localities in southeastern Vancouver Island, but no other form of the species seems to breed on that island. Instead, a number of birds even larger and slightly ruddier than those of the mainland interior, have been taken in migration along the west side, but are of unknown origin. Without more northern material for comparison it is best to leave them for future determination. They are much too large for the postulated *anthinus* Bonaparte and are probably more nearly allied to *sandwichensis* (Gmelin). The point to which it is necessary to call attention is that the Savanna Sparrows of the prairie provinces and British Columbia that have hitherto been lumped under *alaudinus* Bonaparte are consistently different enough to warrant subspecific distinction. The question raised is: to which should the name *alaudinus* adhere?

Passerculus alaudinus was described by Bonaparte (Comptes Rendus, xxxvii, 1853) as like *P. savanna* of Wilson but smaller, without yellow eyebrow, and with a shorter and slenderer bill. Neither the prairie bird nor that of British Columbia, to which the name has generally conjointly been attached, fulfill this diagnosis satisfactorily. They are not smaller, the eyebrows are very rarely without yellow, and the bills, while more slender, are not distinctly shorter. There is, therefore, some doubt as to the application of the name *alaudinus* to either of these two forms. A mounted specimen in the Paris Museum of Natural History, taken by Delattre, supposedly near San Francisco, is assumed to be the specimen from which the above description was taken, but no one conversant with the species has examined it critically and its status as a type is not beyond question. However, as it would be exceedingly unwise to abandon a name so well fixed in literature on a mere suspicion, it is best to accept *alaudinus* as a valid name until definite evidence to the contrary is produced. In the original description there is one character that seems to refer more to the British Columbian bird than to that of the prairies, *i. e.*, the color "rufo-olivascente" (reddish-olive) as applied to one of the varying shades of the back. The geographical evidence points the same way. The type of *alaudinus*, if a representative of either of these races, was evidently a migrant or winter resident on the California coast and hence more likely to summer west of the mountains than east of them. From these two evidences, therefore, we can presume that the ruddy, slightly olivaceous bird of the British Columbia interior should retain the name *alaudinus* and that the paler one of the prairies requires a new name, which is herewith proposed.

Passerculus sandwichensis campestris, subsp. nov.

PRAIRIE SAVANNA SPARROW.

Type.—N. M. C. 10414, ♂, near Red Deer, Alberta, June 29, 1917. Collector, P. A. Taverner. Like *P. s. savanna* of southern Ontario and *P. s. alaudinus* of southern interior British Columbia, but differing:

1. From *savanna*, in spring and summer, in being generally paler above, most noticeably across the base of the neck and on the edges of the closed wings, due to more pronounced buffy-grey feather edgings. The yellow superciliary line may be a trifle lighter (less greenish) and rarely almost white. The bill averages slightly more attenuate but is not constantly so. The breast markings average sharper and sparser but some of this may be due to cleaner, less smoke-stained plumage. These distinctions, while plainly perceived in massed material are not marked enough to make easy recognition of individuals, especially in the more eastern ranges of Manitoba, where the race blends into *savanna*, and many specimens occur that are difficult of allocation aside from geographical considerations. In autumn specimens (mostly post-juvenals examined) the above distinctions hold, but to a less degree, and perhaps it is only in Alberta birds that they are shown in a recognizable extent. Of juvenals just from the nest, only Manitoba specimens are available, and no distinction has been detected between them and *savanna*.

2. From *alaudinus* in lacking a slightly ruddy or olive cast above, and in the yellow superciliary line being paler (less orange) and not suffusing in any degree over the face or the back of the neck. The bill averages slightly less attenuated, and the breast spotting is a little blacker (less brownish) and more sharply defined. These distinctions in spring adults are plain enough to be recognized in all specimens that are not worn or faded. Autumn specimens (mostly post-juvenals) seem practically inseparable.

Localities represented by specimens referred to this form:

Manitoba: 38 spring and summer adults, 12 in first winter plumage and 11 juvenals just from nest; Shoal Lake (north of Winnipeg), Lake St. Martin, Whitewater Lake, Poplar Point, Birch Island, Oak Lake, Steep Rock, Headingly, and Carberry.[2]

Saskatchewan: 19 spring and summer adults, 6 in first winter plumage—Indian Head, Cypress Lake, 12 Mile Lake, Last Mountain Lake, Kutewagan Lake, Wood Mountain Post, Crane Lake, Basin Lake, and Elrose.

Alberta: 26 spring and summer adults, 21 in first winter plumage—Lac la Nonne (type locality), Edmonton, Banff, Rumsey, Steveille, Red Deer, Jasper Park, Peace River Landing, Waterton Lake Park, Many Island Lake, Milk River, Deer Creek, Innisfree, and Beaver-hill Lake.

[2]It might be expected that some of the migrants through the southern areas of the province would represent the dark Churchill form, but only three birds in the collection are so recognized: 5488, ♀, Pearl Beach, Michigan; May 19, 1907; 6833, ♀, Point Pelee, Ontario, May 29, 1913; and 20617, ♂, Ottawa, Ontario, April 27, 1925; which suggests that the migrations of that locality are performed through the eastern woodland region instead of southward through the prairies.

British Columbia: 3 summer adults—Atlin, and one specimen (4795, Allan Brooks) ♂ from Carpenter's Mountain Cariboo District, that is worn and uncertain of identification but tentatively included in this form, postulating a range through central as well as northern British Columbia and confining *alaudinus* to the Thompson River valley and southward.

Mackenzie: 2 summer adults—7668, ♂ Tazin River, July 11, 1914, and 8073, ♀, Coronation Gulf, June 20, 1911, one in first winter plumage, 9948, Coronation Gulf, October 15, 1915. These birds are difficult of allocation as between *savanna* and *campestris* but by bill characters seem to agree more closely with the latter. At any rate they show no suggestion that the dark Churchill form extends northwestward.

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PROCEEDINGS
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GENERAL NOTES.

THE LOUISIANA HERON IN THE WASHINGTON, D. C., REGION.

After a lapse of five years, the Louisiana heron, *Hydranassa tricolor ruficollis* (Gosse), has reappeared in the Washington region. It was first recorded locally by Miss Marion J. Pellew, August 25, 1922, at Alexander Island, Virginia. From then to the 29th of that month it was seen by several observers. It was seen again in 1926 and 1927 by several observers (Cooke, M. T., Proc. Biol. Soc. Wash., Vol. 42, p. 25, Mar., 1929). No birds were collected in the above instances.

On August 21, 1932, one immature bird in company with a snowy egret and a number of little blue herons was observed and collected at Hunting Creek, Alexandria, Virginia. On August 25, a flock of four immature birds was observed at the same locality and three of the number were collected for the U. S. National Museum and Biological Survey collections. What was believed to be the remaining individual was seen at least once each week until September 18, feeding along shore or standing on floating masses of wild celery, *Vallisneria spiralis*, farther out on the water.

—*Clarence Cottam, Leon Kelso, and W. Howard Ball.*

EARLY RECORD OF AN ALBINO OTTER (*LUTRA CANADENSIS*).

In a manuscript diary in our custody entitled "Journal of a Voyage to the Eastward, with his Excel'y Gov'r Belcher To hold a Conference with the Several Tribes of Indians There" an entry under the date of Monday, July 17, 1732, states that Arexes, speaker for the Penobscutt Tribe, after words of greeting to Gov. Belcher, "laid down a White Otters Skin, &c." in token of Amity.

The official minutes of the conference, published in Boston in 1732 as a twenty-three page pamphlet entitled "A Conference of His Excellency Jonathan Belcher, Esq., Captain General and Governour in Chief of His Majesty's Province of the Massachusetts-Bay in New-England, with Edewakenk Chief Sachem of the Penobscut Tribe," etc., cover the proceedings only from Monday, July 24, to Saturday, July 29, and there is no mention therein of the albino otter. —*Leila G. Forbes and Hugh Upham Clark (communicated by Austin H. Clark).*

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PROCEEDINGS

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CRITICAL NOTES ON THE CRACIDAE.

BY W. E. CLYDE TODD.

The neotropical family Cracidae, comprising the Curassows and Guans, is represented in the collection of the Carnegie Museum by 373 specimens. These are included in 8 genera, 34 species, and 13 additional subspecies. A study of this material has resulted in the discovery of four forms which seem to be new, and are described herewith; certain other forms are the subject of critical remarks. The present paper is the eighteenth of the series to appear in these Proceedings, and is governed by the same rules as to measurements, names of colors, etc., as the others. Acknowledgments are due Mr. John T. Zimmer of the American Museum of Natural History for the loan of specimens for comparison, and to the late Mr. Outram Bangs for his courteous permission to examine the series of this group in the Museum of Comparative Zöology. Also, I am greatly indebted to Dr. Erwin Stresemann of Berlin, Germany, for comparing a specimen sent to him for that purpose.

Crax alector and *Crax globicera* Linnaeus.

The names for both of these well-known species go back to Linnaeus, 1766, and have been widely adopted. *Crax* has also been cited as of this date by nearly all recent authors. This procedure was of course perfectly proper so long as the twelfth edition of Linnaeus' work was accepted as the starting-point for binomial nomenclature. But now that the tenth edition has come to be taken instead certain changes are indicated. In this earlier edition *Crax* appears on page 157, with but two species included, *C. nigra* and *C. rubra*. The first name is based solely on several other authors; the second on a brief diagnosis ("capite caerulescente") and on Albin. Unfortunately neither of these names rests on as sound a base as those of the 1766 edition; nevertheless, making due allowance for the faulty descriptions of these early authors and the probabilities in either case we are perhaps justified in assigning *nigra* to the species renamed *alector* in

1766, and *rubra* to the *globicera* of the same date. If we consider both earlier names unidentifiable then *Crax* itself becomes untenable as the name for the genus, since Chubb has designated *C. nigra* as the type (Birds British Guiana, I, 1916, 17).

Crax annulata Todd.

Mr. James L. Peters (MS.) places this name in the synonymy of *C. alberti* without any misgivings, stating that the type (which he has examined) is an immature male, and not a female as supposed and described. He must have overlooked the fact that there is also a male specimen, taken at the same time and place, whose sex is undoubted, and that this example differs from the same sex of *alberti* in a corresponding way. Therefore, I am not convinced that his conclusion is correct. The obvious smaller size and different coloration of both sexes seem to me to be good characters. If the type is an immature male, then what shall we call the other bird of this pair? The relative perfection of the crest-feathers in both specimens argues against the view that they are immature. At the same time it must be admitted that we know so little about the plumage changes in the Curassows from youth to maturity that such a possibility should be kept in mind. In my opinion *C. annulata* is a valid form, showing affinity with the Brazilian *C. globulosa*. Incidentally I may add that neither can I follow Mr. Peters in considering *C. daubentoni* and *C. alberti* conspecific: the females are entirely too unlike.

Mitu tomentosa (Spix).

In coloration this species is so close to the type of the genus (*M. mitu*) that its relationship thereto is undoubted. But in structural characters, as expressed in the shape of the bill and in the character of the crest, it is so different as perhaps to merit generic separation. It lacks any sign of the elevated and enlarged culmen which in *mitu* is so conspicuous, nor is there any depressed crest of broad, flat feathers, but merely a slight elongation of the ordinary feathers along the median line of the crown. In short, in these respects it differs as much from *mitu* as does the latter from *Pauxi*. *Mitu salvini*, however, has a bill intermediate between that of *mitu* and *tomentosa*.

Penelope purpurascens æquatorialis Salvadori and Festa.

Very recently Messrs. Hellmayr and Conover (Auk, XLIX, 1932, 333) have undertaken to discriminate the birds of this species from western Venezuela, the Santa Marta region and the Magdalena Valley of Colombia under the name *brunnescens*. I had already expressed my findings in this case (*cf.* Annals Carnegie Museum, XIV, 1922, 174). I have therefore again gone over our series with some care, and find myself unable to verify any of the characters which they assign.

Penelope argyrotis olivaceiceps, subsp. nov.

Type, No. 106,668, Collection Carnegie Museum, adult male; San Rafael (near Cumanacoa), 2950 feet, Sucré, Venezuela, November 17, 1929; Harold J. Clement.

Subspecific characters.—Similar to *Penelope argyrotis argyrotis* (Bonaparte) of northern Venezuela, etc., but feathers of the crest much darker and less brownish, olivaceous black (1) instead of raw umber.

Range.—Subtropical and Upper Tropical Zones of the eastern part of the coast range of northern Venezuela.

Remarks.—With a single immature bird before him, Dr. Chapman (American Museum Novitates, No. 191, 1925, 6) thought that birds of this species from this region might be racially distinct. Our series of six specimens (shot in November, and in fresh plumage) bear out his suspicions, but the characters he mentions are not the ones that validate the new race. The color of the crest, however, is sufficently diagnostic, even without other characters.

Penelope jacquacu orienticola, subsp. nov.

Type, No. 98,285, Collection Carnegie Museum, adult male; Manacapurú, Rio Solimoës, Brazil, October 5, 1923; Samuel M. Klages.

Subspecific characters.—Similar to *Penelope jacquacu jacquacu* Spix (as represented by a specimen from the Rio Purús), but larger; general coloration of upper parts with much less rufescent wash posteriorly, the breast deeper greenish blue. Wing, 323; tail, 325; bill, 32; tarsus, 81.

Range.—Known at present only from the type-locality, but probably occupying an extensive area north of the Amazon and east of the Rio Negro in Brazil.

Remarks.—The single specimen here recorded represents a considerable eastward extension of the range of this species, and it is not surprising to find that it belongs to a different and undescribed form. The upper parts in the new race are dusky olive green, with a strong metallic sheen, but entirely lacking the brownish tinge so well developed and prominent in typical *jacquacu.* There is less grayish edging to the crest-feathers, while the posterior under parts, instead of being almost "solid" rufescent brown, have merely a little mottling of this color on a dark brown background. Our bird is still more distinct from *P. granti* of Roraima, with which it has been directly compared. The latter is much darker above and on the tail, with a decided bluish sheen, while the crest-feathers are longer, and the primaries are grayish brown, in decided contrast with the rest of the wings I should regard it as a distinct species.

Ortalis guttata subaffinis, subsp. nov.

Type, No. 50,619, Collection Carnegie Museum, adult male; Buenavista, Bolivia, July 6, 1914; José Steinbach.

Subspecific characters.—Similar to *Ortalis guttata guttata* (Spix) of western Brazil, etc., but general color of the upper parts paler, averaging more olivaceous, less brownish, and pileum and hindneck decidedly paler, more grayish, less sooty.

Range.—Tropical Zone of eastern Bolivia.

Remarks.—Ogilvie-Grant (Catalogue Birds British Museum, XXII, 1893, 510) remarks that Bolivian skins of this species seem to be different.

The characters to which he calls attention, however, do not hold in our series, the real differences involving the general color of the upper parts and particularly of the head and neck, which stand out well upon comparison of a series. Compared with four specimens of *Ortalis guttata adspersa* from Boca Rio Urubamba, Peru, loaned by the American Museum of Natural History, the present form appears to be much closer to this than to true *guttata*. It averages a little larger, however, with noticeably heavier feet; the grayish white markings of the lower throat and breast are less sharply defined, and more in the form of scaly edgings than spots; and the chestnut area on the outer rectrices is less in extent, rarely invading the fourth pair. Otherwise it is the same. Measurements of the type: wing, 211; tail, 234; bill, 24; tarsus, 54.

Ortalis motmot ruficeps (Wagler).

Subspecific characters.—Similar to *Ortalis motmot motmot* (Linnaeus) of Venezuela, Guiana, and northern Brazil, but decidedly smaller; rufous of head and neck brighter (chestnut rather than bay); and outer rectrices averaging paler, less rufescent, as seen from below.

Remarks.—South of the Amazon *Ortalis motmot* appears to have been recorded only from Santarem (*cf.* Riker and Chapman, Auk, VIII, 1891, 162). An earlier record from the same place by Allen (Bulletin Essex Institute, VIII, 1876, 82), under the name *Ortalida ruficeps*, belongs here also, as I have recently satisfied myself by an examination of the specimen in question. It is not surprising, in view of the many analogous cases now known, to find that this species also undergoes a racial change upon crossing the great river. Our series of nine specimens from this part of its range are readily recognizable from true *motmot* by their markedly smaller size and by the uniformly more brightly colored rufous tone of the head and neck. The tail, too, is rather paler, and the outermost pair of rectrices have their outer webs more or less bronzy olive at the base, instead of uniform chestnut, as in the typical race.

The identity of the *Penelope ruficeps* of Wagler (Isis, 1830, 1111), said to be from Brazil, has been a matter of conjecture. So far as I can find it has been known only from the type in the Berlin Museum. This was examined by Sclater many years ago, and pronounced a good species. The description seemed to indicate a bird with much more bronzy olive on the outer rectrices than our series from the Rio Tapajóz. A direct comparison was deemed so desirable that I sent one of our specimens to Dr. Erwin Stresemann for this purpose. In reply he writes:

"The type of *Penelope ruficeps* Wagler was collected in the State of Pará by Franz Wilhelm Sieber about 1809 (see Journal für Ornithologie, 1922, 499). The exact locality is unknown, but it may have been the country around Cametá on the lower Rio Tapajóz. Compared with your specimen from Santarem, which I return to-day, the head and neck are much less rufescent, more dull brownish, but otherwise I see no difference. The rectrices are similarly colored in both. The type had been exposed to daylight for nearly 80 years."

This should suffice to fix the name on the bird above characterized. It is of course only a race of *O. motmot.* Six males of the latter measure: wing, 204–220; tail, 250–262; bill, 24–29; tarsus, 58–66. Eight males of *ruficeps:* wing, 175–190; tail, 186–208; bill, 22–24; tarsus, 48–51. That the present form has a much more extensive range than the Rip Tapajóz is indicated by our single specimen from Conceicão do Araguaya, in the State of Pará.

Pipile cumanensis naumburgae, subsp. nov.

Type, No. 93,646, Collection Carnegie Museum, adult male; Arimã, Rio Purús, Brazil, October 11, 1922; Samuel M. Klages.

Subspecific characters.—Similar to *Pipile cumanensis cumanensis* (Jacquin) of Venezuela, Guiana, etc., but lower throat more extensively denuded, and in life flesh red instead of black.

Range.—Brazil, from the Rio Purús eastward to the Rio Teodoro (so far as known).

Remarks.—Our Rio Purús example agrees best with the greener of our two specimens of *cumanensis* from the Rio Caura, Venezuela, except for having the white spots on the breast reduced to mere traces, and for the bare skin of the lower throat, which in the dried state is pale instead of black, and much more bare of feathers. The collector's notes give it as follows: "chin cobalt blue; throat dark indigo, the bare area lower down flesh red." Mrs. Naumburg (Bulletin American Museum of Natural History, LX, 1930, 65) lists a specimen from the Rio Roosevelt having the same characters, and this specimen has also been available for examination in this connection. It agrees with ours except for having the general sheen of the plumage more decidedly bluish (very dark), and the white streaks on the breast somewhat more in evidence (although still small). The white on the wings is the same, also the throat, and undoubtedly the two individuals represent one and the same form. In life typical *cumanensis* has the "chin and upper throat azure blue; colour darkening to slate-black at the lower part of bare neck and on wattle" (Cherrie). Even in the dried skins the difference is conspicuous, and now that a second specimen has turned up it will be well to give a name to the form which it represents, the range of which lies south of the Amazon, from (at least) the Rio Purús eastward to the Rio Teodoro.

It is a pleasure to name this well marked race in honor of Mrs. Elsie M. B. Naumburg, who was the first to point out its characters.

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PROCEEDINGS

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SEVEN APPARENTLY NEW SOUTH AMERICAN BIRDS.

BY W. E. CLYDE TODD.

Further study of the South American collections of birds in the Carnegie Museum continues to bring to light more new species and races from various parts of the continent. The seven forms described in the present paper belong to as many different families, and were recognized as probably new shortly after their receipt. This is the nineteenth paper of the series to appear in these Proceedings, and in the methods of measurement and the names of the colors is uniform with the others. My thanks are due to Dr. C. E. Hellmayr of the Field Museum of Natural History and to Dr. Frank M. Chapman of the American Museum of Natural History for the loan of specimens used in this connection.

Odontophorus capistratus, sp. nov.

Type, No. 79,460, Collection Carnegie Museum, adult male; Cerro Hosane, Bolivia, August 28, 1917; José Steinbach.

Description.—Adult male: front, sides of head (except auriculars), and throat black; crown, nape, and auriculars dull brown (between raw umber and sepia); upper back strongly shaded with raw umber on a paler background (Saccardo's olive), the feathers vermiculated with deep brown and marked with shaft-streaks or elongated spots of white margined with black, these spots becoming larger on the scapulars and wing-coverts; lower back Dresden brown, with faint dark spotting; tail and upper coverts maculated with Brussels brown, black and buffy; wings dusky, with buffy mottling on the outer webs of the remiges; scapulars and wing-coverts like the upper back, but spotted with black in bold pattern, these black spots confined mostly to the inner webs of the feathers, tertiaries with broad cinnamon buff terminal and lateral margins on the inner webs; under parts dull Mars yellow, a little deeper (amber brown) on the breast and sides, the lower abdomen, flanks, and tibiae dull Dresden brown with an olivaceous wash

and faint darker bars and vermiculations; under tail-coverts similar but washed with amber brown; "bill black; feet plumbeous." Wing (type), 143; tail, 60; bill, 16.5; tarsus, 48.

Range.—Known at present only from the type-locality.

Remarks.—This new species is based on three male specimens, all from the same locality, in the western part of the Department of Santa Cruz, Bolivia. It is of course most nearly related to *O. speciosus* von Tschudi from Peru, but differs conspicuously from that form in its head pattern. The broad superciliaries are pure black (instead of black mixed with white); they unite in front on the forehead, and behind continue to join the black of the throat and sides of the neck, leaving only the auriculars brownish like the crown. The female is at present unknown, but will probably be found to differ from the male much as in *O. speciosus.* This new species marks the southernmost extension of the genus *Odontophorus* in the Andean region.

Laterallus viridis brunnescens, subsp. nov.

Type, No. 59,182, Collection Carnegie Museum, adult male; El Tambor, Santander, Colombia, December 23, 1916; M. A. Carriker, Jr.

Subspecific characters.—Similar to *Laterallus viridis viridis* (Müller) of French Guiana, etc., but general coloration of upper parts much more brownish, less olivaceous, and the pileum duller, darker rufous.

Range.—Tropical Zone of Colombia, west of the Eastern Andes.

Remarks.—This species, until very recently known as *Creciscus viridis* (*cf.* these Proceedings, XLV, 1932, 119), was recorded from Colombia by Salmon many years ago (*cf.* Sclater and Salvin, Proceedings Zoological Society of London, 1879, 545), but has not been found there since until Mr. Carriker turned up two examples from El Tambor in 1916. These were easily recognized as distinct from true *viridis,* of which we have a good series from French Guiana, but were not described sooner because of inability to compare them with *Crex facialis* von Tschudi of Peru. Recently, however, through the courtesy of Dr. C. E. Hellmayr, I have been able to examine three adult specimens of this latter bird (the type of which was an immature example). In *facialis* the upper parts are deep olive; in true *viridis* they run from bright brownish olive to dull medal bronze; while in the type of the new form they are dull Brussels brown, becoming raw umber on the wings and tail. A second specimen is paler and more olivascent on these parts, but still with a distinct brownish wash. "Iris brown; feet brick red; bill horn-color, plumbeous below at the base." The under surface, too, is not quite so deeply colored as in *viridis.* Altogether the Colombian bird seems to constitute an excellent subspecies.

Brazilian birds of this species, collectively considered (we have twenty-four fine skins from the lower Amazon), differ from those of French Guiana (thirty-five skins) in their generally lighter coloration, particularly of the upper parts. The difference, however, is only an average one, and can be appreciated only when series are compared, but it seems worthy of recognition by name. Being unable at the moment to consult several of the references, I am not sure what is the earliest name available for this race.

Galbula rufoviridis heterogyna, subsp. nov.

Type, No. 80,269, Collection Carnegie Museum, adult female; Palmarito, Rio San Julian, Chiquitos, Bolivia, May 28, 1918; José Steinbach.

Subspecific characters.—Similar to *G. rufoviridis rufoviridis* Cabanis of Brazil, but female decidedly paler below, and male also slightly paler.

Range.—Tropical Bolivia, east of the Andes.

Remarks.—Galbula rufoviridis has been known from Bolivia for many years (*cf.* Sclater, Monograph Jacamars and Puff-birds, 1879, 12), but it has ben supposed by even such authorities as Dr. Hellmayr (Novitates Zoologicae, XV, 1908, 87) to range to that country unchanged in character. As a matter of fact, Bolivian males are little different from those of that sex coming from Brazil, but when we come to examine and compare females the difference between the two respective series at once becomes apparent. Whereas in true *rufoviridis* the sexes are much alike, save for the color of the throat, in the Bolivian race they are strikingly different, the females being decidedly paler than the males, and much paler of course than Brazilian females. The throat is buffy whitish, and the under parts below the breast-band are warm buff, deepening into cinnamon buff on the flanks and crissum. Sclater's figure of the female in his Monograph (Plate 3) was based on a Bolivian example, and is a fair representation of the present bird.

Conopophaga castaneiceps subtorridus, subsp. nov.

Type, No. 67,150, Collection Carnegie Museum, adult male; Heights of Caldas, Colombia, June 14, 1918; M. A. Carriker, Jr.

Subspecific characters.—Adult male similar to the same sex of *Conopophaga castaneiceps castaneiceps* Sclater of the Eastern Andes of Colombia, but pileum much darker, chestnut anteriorly, passing into deep Prout's brown posteriorly; back darker gray, with more olive brownish wash.

Range.—Subtropical Zone, Western Andes of Colombia.

Remarks.—Our single pair of birds from the heights above Caldas have nothing to do with *brunneinucha,* as shown by actual comparison with specimens of the latter in the collections of the Field and American Museums. The male is more nearly like that of *castaneiceps* proper, but is darker above, the gray ground-color and the olive wash both being of a deeper shade, while the pileum is chestnut in front, darkening rapidly into deep Prout's brown on the crown and nape, giving a much darker general effect. In *castaneiceps* the pileum is deep hazel, almost uniform, and the back is dark mouse gray with little olive brownish wash, except posteriorly. The under parts are not different. The female differs sharply from the same sex of *castaneiceps* and *brunneinucha* in having the breast gray (like the male, but not so deep), contrasting with the rusty throat and malar region. A rusty wash on some of the breast feathers (laterally) might indicate that this example is wrongly sexed, and is really an immature male. It has a hard skull, however, and otherwise looks like an adult female. Its upper parts and pileum are darker than in the female of *castaneiceps,* just as in the other sex. If really an adult female, this pair

of birds must belong to a form which is distinct from *castaneiceps*, but if not, it is difficult to account for the difference between the male of this pair and the male type of *chocoensis*.

Our male bird has been compared with the type of *C. castaneiceps chocoensis* Chapman, with which it has nothing to do. The latter is obviously a Tropical Zone bird, while our specimens are from the Subtropical Zone. The present form differs from *chocoensis* by being dark grayish above, instead of dark brownish; the flanks and crissum are also dark gray, like the abdomen medially, instead of brown, contrasted with the abdomen, as in *chocoensis*. The size, too, is larger (wing, 73; tail, 41; bill, 14.5; tarsus, 29).

While I am for the present calling this new form a subspecies of *castaneiceps*, I suspect that it may really be specifically distinct, and that *chocoensis* may also be in the same category.

Conirostrum cyanonotum, sp. nov.

Type, No. 104,328, Collection Carnegie Museum, adult male; Colonia Tovar, Aragua, Venezuela, April 22, 1929; Ernest G. and Margaret L. Holt.

Description.—Adult male: pileum Hay's blue, with a few silvery white streaks on the forehead; upper parts in general black, strongly overlaid with azurite blue, brightening into smalt blue on the rump and upper tail-coverts; wings black with narrow outer edgings azurite blue, and lesser wing-coverts almost "solid" azurite blue; sides of head and entire under parts blackish violet gray with a deep bluish cast in some lights, especially posteriorly; bill black; feet dark (in skin). Wing, 74, 77; tail, 58, 56; bill, 12, 11.5; tarsus, 17.5.

Adult female: pileum diva blue, becoming grayish posteriorly; upper parts light olive green, brightening into warbler green on the rump and upper tail-coverts; wings and tail blackish with light olive green edgings; sides of head, and throat and breast pale neutral gray; edge of wing warbler green; bill and feet dark (in skin). Wing, 69; tail, 53; bill, 12; tarsus, 17.

Range.—Subtropical Zone, coast range of northern Venezuela.

Remarks.—While at first glance this new species seems most like *C. atrocyaneum* Lafresnaye of Ecuador, Peru, and Bolivia, its real relationships appear to lie rather with the geographically nearer *C. albifrons* Lafresnaye of the Colombian Andes. This is indicated by the close resemblance of the females of these two respective species, and by the white streaks on the forehead of the male in the present form. The single female example, indeed, differs from the same sex of *albifrons* only by its duller green upper parts.

The genus *Conirostrum* is new to the coast range of Venezuela, so that it is not surprising to find that the form representing it there should turn out to be undescribed. Mr. and Mrs. Holt secured three specimens at Colonia Tovar, all taken in or near the forest at 6500 feet altitude. It is of course a Subtropical Zone form.

Agelaius thilius alticola, subsp. nov.

Type, No. 94,494, Collection Carnegie Museum, adult male; Desaguadero, Bolivia, March 6, 1922; José Steinbach.

Subspecific characters.—Adult male similar to the same sex of *Agelaius thilius thilius* (Molina), but larger, and without any pale superciliaries. Adult female also larger and much darker in general coloration. Wing (type), 98; tail, 77; bill, 23; tarsus, 22.

Range.—Highlands of Bolivia and Peru.

Remarks.—Our fine series of thirty-six specimens (all from Guaqui and Desaguadero, Bolivia, on the borders of Lake Titicaca) show that we are dealing with a race quite distinct from either true *thilius* or *chrysapterus.* Males differ in being uniformly larger, and in lacking any trace of the pale superciliaries so noticeable in *thilius,* even in supposedly old birds. Females differ conspicuously from both of the other forms in their much darker coloration; they are also larger. These differences were first remarked by von Berlepsch and Stolzmann (Ornis, XIII, 1905, 103), when dealing with specimens from Peru and Bolivia. The only name we need to consider in this connection is the *Agelaius xanthocarpus* of Bonaparte (Conspectus Avium, I, 1850, 430), said to be from "Peru." Dr. C. E. Hellmayr has examined the types of this supposed form, and reports that it is a pure synonym of *A. thilius,* the locality "Peru" being an error (*cf.* his remarks in Field Museum of Natural History Zoological Series, XIX, 1932, 100).

Three adult males of true *thilius* from Chile (Field Museum Collection) measure as follows: wing, 94–96; tail, 73–75; bill, 22–23; tarsus, 25.5–27. Argentina specimens are somewhat smaller, and the female is less heavily streaked below. Sclater (Catalogue Birds British Museum, XI, 1886, 343–4) admits two races of this species, but calls the one from east of the Andes *chrysocarpa*—wrongly as it appears, since this name was based on the bird of Chile by the original describer (Vigors, Proceedings Zoological Society of London, 1832, 3). The next name, *Icterus chrysopterus* D'Orbigny and Lafresnaye (Synopsis Avium, ii, 1838, 5) is invalidated by *Agelaius chrysopterus* Vieillot (Nouveau Dictionnaire d'Histoire Naturelle, XXXIV, 1819, 539). This brings us to *Agelasticus chrysapterus* Cabanis (Museum Heineanum, I, 1851, 188), based on Azara's bird from Paraguay, as the first name of undoubted pertinence. Although differing by only one letter, it is derived from another word, and therefore admissible.

Buarremon phaeopleurus exortus, subsp. nov.

Type, No. 106,965, Collection Carnegie Museum, adult female; La Elvecia, Sucré, Venezuela, January 12, 1930; Harold J. Clement.

Subspecific characters.—Similar to *Buarremon phaeopleurus phaeopleurus* Sclater of the Caracas region of Venezuela, but upper parts in general dark citrine, more greenish and less brownish; tail also darker, more dusky, less brownish, and sides, flanks, and crissum more grayish, greenish-tinged, but without any buffy wash.

Range.—Subtropical and Upper Tropical Zones of the eastern coast range of Venezuela.

Remarks.—Three specimens from El Limon (2480 feet) and La Elvecia (5850 feet), near Cumanacoa, in the State of Sucré, Venezuela, differ conspicuously from the good series (27 skins) of true *phaeopleurus* in the respects just pointed out, and constitute an easily recognizable subspecies, the range of which is probably cut off from that of *phaeopleurus* proper by the low country to the west.

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A NEW WEAVER-BIRD FROM CAMEROUN.

BY W. E. CLYDE TODD.

The Dark-backed Weaver-bird of Cameroun has heretofore been referred to the *Symplectes tephronotus* of Reichenow (Journal für Ornithologie, 1892, 184), described from Buea, on the slopes of Mount Cameroun. The receipt of a topotype from this very locality shows that the latter is a mountain form, and not the same as the birds from lowland localities. These may therefore be designated

Symplectes amaurocephalus analogus, subsp. nov.

Type, No. 101,457, Collection Carnegie Museum, adult male; Jele, Cameroun, West Africa, September 21, 1924; Jacob A. Reis, Jr.

Subspecific characters.—Similar to *Symplectes amaurocephalus amaurocephalus* (Cabanis) of Angola and the region to the eastward thereof, but upper parts and wings slightly darker, duller gray; throat more blackish, less grayish; and under parts deeper, more orange yellow (nearest light cadmium of Ridgway's "Color Standards"). Size about the same: wing, 90; tail, 56.

Range.—Lowlands of Cameroun.

Remarks.—Eleven specimens of the new form from several localities (Efulen, Ngobilo, Jele, Sakbayeme, and Bodpo) in Cameroun have been examined in this connection. They agree among themselves, and differ from the topotype of *tephronotus*, in larger size, and in having the head brown (instead of black) and the upper parts, wings, etc., decidedly brownish (instead of grayish). The iris is marked "Brazil red," instead of "clove brown," as in *tephronotus*.

Cabanis' figure of *Sycobrotus amaurocephalus* (Journal für Ornithologie, 1880, pl. 21, fig. 1) represents a bird with the under parts much paler yellow than our Cameroun series. With this plate our single Angola specimen (No. 108,674, Chingoroi, R. and L. Boulton) agrees well, so that there can no longer be any doubt of the propriety of giving the Cameroun birds a distinctive name. Thanks to Dr. James P. Chapin of the American Museum of Natural History I have been able to compare the new form as

well with *S. bicolor* and *S. mentalis*, with which it clearly has nothing to do. I would call *bicolor*, *mentalis*, *stictifrons*, and *amaurocephalus* all species, and probably *tephronotus* also, as already intimated. The present form, however, is so closely related to *amaurocephalus* that it ought to stand in a conspecific relation thereto, even although their respective ranges are not yet known to approximate each other.

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REMARKS ON COYOTES, WITH DESCRIPTION OF A NEW SUBSPECIES FROM SALVADOR.

BY E. W. NELSON.

Among the specimens of mammals collected during the biological survey of Salvador under the direction of Mr. Donald R. Dickey, are two coyotes, a male and a female. These specimens came from near the Cerro Mogote, two miles west of the Rio Goascoran, in the District of La Union, north latitude 13° 30′. With the exception of a specimen in the National Museum of Costa Rica, captured in Guanacaste, western Costa Rica, the specimens obtained by the Dickey party in Salvador are, so far as I am aware, the southernmost representatives of these small members of the wolf tribe ever collected.

Comparison of the Salvador coyote with its relatives from Mexico and also with others from various sections of the United States reveal that the Salvador animals not only represent a previously unknown subspecies but, surprisingly enough, represent one of the larger subspecies of the entire group of coyotes, almost equaling in size *Canis latrans lestes*.

Comparison of the skulls of the Salvador coyote with those from various parts of Mexico and the United States also indicate very conclusively, to my mind, that no salient differences exist in this group that warrant the recognition of more than a single species of coyote to which all belong, differing here and there under environmental changes as geographic subspecies. As a result of this conclusion the coyotes that have been described should stand as follows:

SUBSPECIES	TYPE LOCALITIES
Canis latrans latrans Say	Near Blair, Washington County, Nebraska.
Canis latrans nebracensis Merriam	Johnstown, Brown County, Nebraska.
Canis latrans lestes Merriam	Toyabe, near Cloverdale, Nye County, Nevada.

Canis latrans ochropus Eschscholtz.....Typical near Tracy, San Joaquin County, California.
Canis latrans clepticus Elliot.....Vallecitos, San Pedro Martir Mountains (8,000 feet), Lower California, Mexico.
Canis latrans peninsulae Merriam.....Santa Anita, Lower California, Mexico.
Canis latrans mearnsi Merriam.....Quitobaquito, Pima County, Arizona.
Canis latrans jamesi Townsend.....Tiburon Island, Sonora, Mexico.
Canis latrans microdon Merriam.....Mier, Tamaulipas, Mexico.
Canis latrans estor Merriam.....Noland's Ranch, San Juan River, San Juan County, Utah.
Canis latrans texensis Bailey.....Nueces County, 45 miles southwest of Corpus Christi, Texas.
Canis latrans impavidus Allen.....Rio de las Bocas, northwest Durango, Mexico.
Canis latrans cagottis Hamilton Smith....Rio Frio, west slope Mt. Iztaccihuatl, Valley of Mexico, Mexico.
Canis latrans vigilis Merriam.....Near Manzanillo, Colima, Mexico.
Canis latrans goldmani Merriam.....San Vicente, Chiapas, Mexico.
Canis latrans dickeyi, subsp. nov.....Near Cerro Mogote, 2 miles west of Rio Goascoran, La Union, Salvador.

I am indebted to Mrs. Donald R. Dickey for the privilege of using the specimens of Salvador coyotes in the Dickey collection. In recognition of the scientific work accomplished, and especially the completion of the fine biological survey of Salvador under the direction and at the expense of the late Donald R. Dickey, it gives me pleasure to name this well marked geographic subspecies in his honor.

Canis latrans dickeyi, subsp. nov.

SALVADOR COYOTE.

Type.—No. 12260, ♂ adult, collection of Donald R. Dickey. Collected near Cerro Mogote, two miles west of Rio Goascoran, District of La Union, Salvador (north latitude 13° 30′), December 29, 1926, by G. D. Stirton.

General characters.—One of the larger of the coyotes, about equaling *Canis latrans lestes* of Nevada and distinctly larger than its nearest known relatives *Canis latrans goldmani* of interior Chiapas, *Canis latrans cagottis* of the southern end of the Mexican tableland, and *Canis latrans vigilis* of Colima, on the west coast of Mexico. Skull about the size of that of *lestes* but teeth smaller, with distinctly larger inner cusp on upper carnassial. Color in general darker, more dull rusty rufous, with tail much more heavily overlaid with black and with larger black tip; subterminal color of hairs on tail rusty rufous, giving a more rufous tinge than in any of the nearest relatives mentioned from Mexico.

Colors of type.—Top of nose and crown dull grizzled grayish, with a slight rusty tinge, shading into dull rusty rufous on sides of nose and into paler, more buffy grayish on sides of head back of and below eyes; a light dingy buffy area around eyes; nape and top of neck dull rusty rufous, washed with dusky, shading posteriorly into more dingy grayish on top of lower neck and top of shoulders; rest of back and sides of body dark rusty rufous washed with black on guard hairs, heaviest on anterior back and on rump passing into the heavily black washed tail with underlying dingy rusty buffy showing through; tail ending in strongly marked black tip; lower part of flanks dull buffy rufous, a paler shade of same extending down across front of abdominal area; front and sides of legs dark rusty rufous, closely similar to color of same parts in the other Mexican forms *goldmani, cagottis,* and *vigilis;* back of ears dull rusty rufous similar to nape but clearer; chin, throat, breast, posterior part of abdomen, and inguinal area dull whitish.

Skull characters (type).—Larger than in any of the three geographically nearest Mexican forms,—*goldmani, cagottis,* and *vigilis;* molariform teeth larger and more massive than in *goldmani* and *vigilis,* proportionately smaller than in *cagottis* and actually smaller than in *lestes* but with inner cusp of upper carnassial more strongly developed than in any of the subspecies named above; supraoccipital plane higher from upper border of foramen magnum to junction with sagittal-lambdoid crests than in any of the other subspecies named.

Measurements of type.—Total length, 1280 mm.; tail vertebrae, 380; hind foot, 250.

Skull measurements (of type).—Greatest length, 209 mm.; condylobasal length, 193; zygomatic breadth, 101.2; interorbital breadth, 32.2; length of upper canine-molariform tooth row, 87.7; outside crown length of upper carnassial, 19.8.

Remarks.—Coyotes are generally distributed on the Mexican tableland except in the Valley of Mexico and other southern parts of the highlands where they have become extinct or are very uncommon. On the Isthmus of Tehuantepec Major Goldman and the writer found no trace of them but they appeared again on the interior highlands adjacent to the boundary in Chiapas, Mexico, and at Chancol, Guatemala. Their next point of occurrence, so far as known, is in Salvador and the adjacent part of Honduras. Beyond this we have information of their presence in western Costa Rica including the Peninsula of Nicoya, which is probably the southern extreme of their range.

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THE GENUS MESOCOELUS SCHULZ (HYMENOPTERA, BRACONIDAE).

BY C. F. W. MUESEBECK,
Bureau of Entomology.

The identity of this anomalous and apparently rare genus of Braconidae has remained more or less obscured since its first description by Ashmead under the name *Coelothorax*, a name later shown by Schulz to be preoccupied. It is the purpose of this paper to define the taxonomic position of the group and to review the known species.

Mesocoelus Schulz.

Coelothorax Ashmead, Proc. Ent. Soc. Wash., vol. 4, 1898, p. 165 (no species included).

Coelothorax Ashmead, Trans. London Ent. Soc., 1900, p. 275.

Genotype.—Coelothorax laeviceps Ashmead (monobasic).

Mesocoelus Schulz (=*Coelothorax* Ashmead, not Anceys), Zool. Ann., vol. 4, 1911 (1909), p. 88.

In the second reference cited above Ashmead called attention to the wide difference between this genus and all other genera placed with it in the Microgasterinae, and suggested a relationship with the Braconinae (Agathidinae of authors), although retaining it in the Microgasterinae because of the absence in the genotype of the mesonotal furrows and radial cell. Having seen no specimens belonging to the genus I followed Ashmead and likewise included *Mesocoelus* in my key to the genera of Microgasterinae.[1] Since the publication of that paper, however, I have had an opportunity to study the genotype, which is in the British Museum, and have seen additional material recently received at the United States National Museum.

Except for the absence of the radial cell there is no apparent similarity between *Mesocoelus* and any genus in the Microgasterinae. On the other hand, the characteristic form of the stigma, what little remains of the

[1]Proc. U. S. Nat. Mus., vol. 61, Art. 15, 1922, p. 8.

venation, the shape and sculpture of the abdominal tergites, and the form and structure of the thorax, suggest relationship with *Bassus* Fabricius in the Braconinae; and in my judgment the genus should be placed in that subfamily.

The following key will separate the genotype and the two new species described below. *Coelothorax frersi* Brethes, the only other species referred to this genus, is unknown to me. I do not believe that it belongs in *Mesocoelus* but I can not determine this with certainty from the inadequate description.

KEY TO THE SPECIES OF MESOCOELUS.

1. Notauli distinctly impressed; prepectus margined; mesopleura shagreened and opaque.....*philippinensis*, new species
   Notauli wanting; prepectus immargined; mesopleura smooth and shining.....2
2. Mesoscutum with a distinct, punctiform, though shallow, median impression; posterior legs mostly yellowish brown, apex of coxa and basal segment of trochanter yellow; antennae 24-segmented
   laeviceps (Ashmead)
   Median impression on mesoscutum indistinct; posterior legs black, with apex of coxa, trochanter entirely, and extreme bases of femur and tibia, pale; antennae 22-segmented.....
   acrocercopis, new species

Mesocoelus acrocercopis, new species (Fig. 1).

Very similar to *laeviceps* (Ashmead) but apparently separable by the darker posterior legs, by the indistinct, non-punctiform median impression of the mesoscutum, and by the slightly shorter antennae. D. S. Wilkinson, of the British Imperial Bureau of Entomology, has kindly compared a specimen with the type of *laeviceps* and agrees that it is distinct.

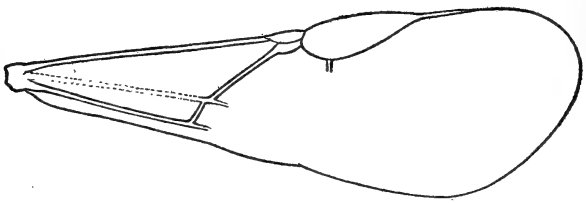

Fig. 1.—Outline of anterior wing of *Mesocoelus acrocercopis*, new species, to show venation.

Female.—Length, 2 mm. Head transverse, wider than thorax, the occiput a little concave and immargined; face broader than long, evenly convex, shining, with only faint reticulate sculpture; clypeus transverse, its anterior margin truncate; cheeks and malar space strongly inclivious, the head short vertically; maxillary palpi about as long as face; eyes rather

large, bare; antennae slender, nearly as long as body, 22-segmented; ocelli small; ocelli-ocular line about three times diameter of an ocellus; vertex and occiput very shallowly punctate or reticulate; temples narrow but rounded; tempes and cheeks polished.

Thorax more than twice as long as its greatest width; mesoscutum strongly narrowed anteriorly, subopaque, finely closely punctate, minutely and more shallowly so laterally, indistinctly impressed medially just behind middle; notauli wanting; furrow at base of scutellum broad, coarsely foveate; scutellum convex, faintly punctate, shining; propodeum about as long as wide, nearly horizontal, closely finely punctate like mesoscutum and with a short basal median carina; prepectus immargined; mesopleurum smooth, with a strongly impressed smooth longitudinal furrow below; metapleurum minutely confluently punctate; legs slender, anterior and middle pairs short, posterior pair very long; posterior coxae more than half as long as abdomen, minutely reticulate and subopaque outwardly; posterior trochanters long and slender; posterior femora only slightly longer than their coxae; hind tibiae as long as abdomen and beset with numerous stiff bristles; inner calcarium of hind tibia very nearly as long as metatarsus; posterior tarsi slender and with scattered stiff bristles like those on tibiae; claws very slender, neither cleft nor with a distinct basal tooth; stigma large, broadest toward base, acuminate at apex, much longer than metacarpus; radius obsolete except for a very short stub from near base of stigma; cubitus wanting; basal vein distinct; medius faint, nervulus very slightly antefurcal, somewhat inclivous; discoideus represented only by a short basal spur; in hind wing only mediella and basella well developed; nervellus weak; submediellan cell very short.

Abdomen scarcely as long as thorax and a little narrower, broadening slightly to end of second tergite and narrowing strongly from this point to apex; first tergite more than one and one-half times as long as broad, three-fourths as long as remaining tergites combined, finely confluently punctate and opaque, basally appearing very delicately irregularly longitudinally aciculate; second and following tergites polished; ovipositor sheaths slender, slightly longer than posterior femur and nearly as long as posterior tibia; hypopygium nearly attaining apex of last dorsal segment.

Black; antennae black, wings clear hyaline, stigma and costal margin dark brown; anterior and middle legs, including coxae, yellow; hind legs black except coxae apically, trochanters, and extreme bases of femora and tibiae, which parts are yellowish.

Male.—Agrees with female in essential characters. The median carina of the propodeum is nearly complete in the allotype; the antennae are 22-segmented as in the type.

Type-locality.—Santiago de las Vegas, Cuba.

Type.—No. 44664, U. S. N. M.

Host.—*Acrocercops* sp.

Two females and two males reared by A. Otero under E. E. A. de Cuba No. 9471a, April 2, 1931. The female paratype has been deposited in the collection of the British Museum.

Mesocoelus philippinensis, new species.

Closely resembles *acrocercopis* but differs especially in having distinct notauli, in the margined prepectus, in the finely shagreened and opaque mesopleura, and in the entirely black posterior coxae. Agrees with the foregoing description of *acrocercopis* except as follows:

Female.—Length, 3 mm. Face much broader than long, shallowly but distinctly punctate or reticulate and opaque; antennae 24-segmented; temples strongly receding; notauli well impressed, meeting before posterior margin of mesoscutum; entire thorax finely shagreened and opaque, the sculpture coarsest on propodeum and metapleura; prepectus finely but distinctly margined; mesopleural furrow with a row of minute punctures; posterior coxae completely finely shagreened and opaque; medius wanting; abdomen scarcely more than half as wide as extreme width of thorax; first tergite twice as long as broad at apex, finely longitudinally aciculate, very weakly so toward apex, the extreme apex smooth; ovipositor sheaths as long as posterior tibia, which is as long as abdomen.

Tegulae brown; anterior and middle coxae brown; posterior coxae entirely blackish.

Male.—Antennae 23-segmented, scape, pedicel, and basal flagellar segments yellow; abdomen somewhat more elongate; the first tergite little more than half as long as the remaining tergites combined and aciculate only on basal half, finely reticulate apically; second tergite weakly tinged with brown.

Type-locality.—Mt. Maquiling, Luzon, Philippine Islands.

Allotype-locality.—Los Banos, Luzon.

Type.—No. 44665, U. S. N. M.

Two females and four males, the female paratype and two male paratypes from the allotype locality, the remaining male paratype from the island of Sibuyan. Two male paratypes have the antennae 24-segmented.

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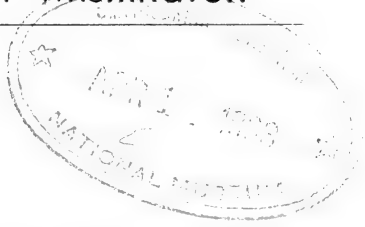

A NEW RACE OF AIMOPHILA CARPALIS FROM MEXICO.

BY ROBERT T. MOORE.

The securing of four specimens of *Aimophila carpalis* (Coues) in Arizona by the author in June, 1932, induced a comparison with thirty-six specimens of this species in the Dickey collection at the California Institute of Technology. This led to the assembling of approximately ninety-four specimens, including the type of *Aimophila carpalis* and twelve other specimens from approximately the same locality near Tucson in Arizona. The birds from the Alamos Faunal Area of southern Sonora seem distinct and are herewith separated. My thanks are gratefully offered to Dr. Alexander Wetmore of the Smithsonian Institution for his courtesy in loaning the type specimen of *Aimophila carpalis* and other topotypical material; to Dr. Harry C. Oberholser of the Bureau of Biological Survey, and to Dr. Wilfred H. Osgood of the Field Museum of Natural History, for their kindness in forwarding supplementary material for comparison.

It seems fitting to name this race for the late Outram Bangs, as a slight tribute to the years of work he devoted to the study of Mexican birds. Throughout his life he was noted for his kindly nature and sympathetic understanding of the problems of other ornithologists. It was characteristic of him, that only a short time before his death, he displayed once more his generosity by forwarding the larger part of the material loaned, forty specimens, including a large series from the Alamos Faunal Area near the type locality of the proposed new race. I make this dedication with a peculiar feeling of respect for a truly great and beloved ornithologist.

Aimophila carpalis bangsi, subsp. nov.

SONORA RUFOUS-WINGED SPARROW.

Type.—Male adult; no. 31,012, collection of Donald R. Dickey; Guirocoba, Sonora, Mexico; May 23, 1930; collected by J. T. Wright; original no. 5762.

Subspecific characters.—Nearest to *Aimophila carpalis* (Coues), but size smaller; in particular bill shallower; legs and feet more slender and smaller; wing more rounded; mandible and tarsi lighter in color in dried skins at least. Females are similar to males, but average smaller in all measurements.

Geographical distribution.—Southern Sonora, from Obregon to Tesia, Chinobampo, Guirocoba, and probably to contiguous portions of the same faunal area in Chihuahua and Sinaloa, north to approximately Tecoripa, San Javier and Oposura. Birds from these last named localities are more or less intermediate between this new race and *carpalis.* Birds from the Guaymas area are only slightly larger and grayer on the upper parts and apparently should be referred to *bangsi.*

Description of type.—Adult male with newly moulted breeding plumage nearly completed. Pileum streaked broadly with bay[1] and narrowly with pale olive-gray, the latter forming an indistinct median line; a rather broad superciliary stripe and sides of head pale smoke gray, the latter crossed by a narrow post-ocular streak of bay; loral streak blackish brown mixed with bay; malar streak mixed natal brown and black; narrow submalar streak blackish brown; at a point beneath posterior margin of eye-ring, malar streak is concealed by gray tips, but continues in concealed semilunar black line about base of ear opening; upperparts, including upper tail-coverts, drab, the back and scapulars streaked with clove brown, the streaks bordered by natal brown; inner vane of outer rectrices hair brown, outer vane margined with grayish white, tipped obliquely with same; next pair of rectrices fuscous, narrowly margined on both sides and tipped with grayish white; remaining rectrices, except median pair, fuscous narrowly margined by pale olive-buff; partially developed median rectrices fuscous-black margined on both vanes narrowly by pale olive-buff; remiges fuscous margined on outer vane with white; freshly moulted secondaries and tertials fuscous-black margined by cinnamon drab; older secondaries fuscous; lesser wing coverts russet; chin and throat pure white; breast light mouse gray; abdomen whiter; flanks mouse gray tinged with drab; under tail-coverts olive-buff; in dried specimens legs chamois; maxilla fuscous, base black; mandible (viewed from below) cream buff, tip fuscous.

The new race differs from typical *Aimophila carpalis* in its smaller size in all measurements, markedly in its more shallow bill, shorter and more slender tarsus and smaller feet; in its lighter colored mandible (ivory yellow to cream buff), lighter colored tarsus and feet (cinnamon buff to chamois). Perhaps the most noteworthy difference between the two races is the decrease in the average difference between the length of the longest primary

[1]Names of colors in paper taken from Ridgway, Color Standards and Color Nomenclature, 1912.

and the length of the longest secondary. In this measurement different degrees of development of individual feathers have been given due consideration. This difference averages fifty per cent smaller in *bangsi* and creates a more rounded wing. In three of the measurements given, the maximum of the males of *bangsi* does not reach the minimum of the males of *carpalis*. In making the statement that the mandible, tarsi, and feet are lighter colored, I am quite aware that allied species in both *Aimophila* and *Spizella* exhibit marked changes in color of these parts at different periods of the year and in different stages of moult. In addition another factor may have been created by the unusual material employed by Frazar in preparing certain specimens which were collected in Sonora. Nevertheless the change of color, which has taken place in many of the species he collected, does not seem to be obvious in this series. All these various factors have been carefully weighed. There are some fresh specimens of both *carpalis* and *bangsi* in the same stage of moult to indicate that birds of the two races reveal the color differences mentioned. Females of the new race exhibit all the differences shown by the males in comparison with true *carpalis*, including smaller size, lighter color of bill and legs. Although the percentage of decrease in most of the measurements is not so large as in the comparison between the males, nevertheless it is less in every measurement. It is interesting to note that the females of true *carpalis* are not only larger than the females of *bangsi*, but average larger in every measurement except two than even the males of *bangsi*.

In the preparation of this paper three juveniles and ninety-one adults have been examined and measured. Of these forty-two are ascribed to *bangsi* and twenty-one may be referred to *carpalis* of Arizona and northern Sonora. Twenty-eight specimens are classed as intermediates, coming mostly from Tecoripa, San Javier, and Oposura. In the table of measurements, I have eliminated juveniles and specimens that are badly damaged.

On account of the separation of the new race, it will now be necessary to change *Aimophila carpalis* (Coues) to *Aimophila carpalis carpalis* (Coues). More material from extreme northern Sonora is desirable before attempting to determine the southern boundary of the range of this form. Three males from Saric in extreme northern Sonora, averaging somewhat smaller, are assigned to true *carpalis*. The securing of the three males and one female from Fresnal, Arizona, by the author, would seem to extend the range westward as far as the western base of the Baboquivari Range of mountains. However, these specimens exhibit certain differences of color, and come from this western base, which seems to be the boundary line between the Eastern Plains and Colorado Desert Faunal Areas. The exact boundary has not yet been satisfactorily determined. For the purpose of obtaining more light on the problem, Mr. A. J. van Rossem and the author did some collecting at various points in southern Arizona during June and July, 1932. The results of Mr. van Rossem's study of the material point to the conclusion that hitherto this boundary has been located too far to the east and make it necessary to use instead the western base of the Baboquivari Mountains.

TABLE OF MEASUREMENTS OF *Aimophila carpalis*.

AVERAGE MEASUREMENTS.

	Wing	Tail	Exposed culmen	Height of bill at base	Tarsus	Diam. mid of tarsus	Mid. toe minus claw	Post. toe minus claw	Longest primary from base	Longest secondary from base	Aver. diff. bet. pr. and sec.
Males.											
12 adults from Arizona and northern Sonora (*carpalis*)	62.93	63.24	10.30	7.2	19.5	2.24	13.40	6.91	49.43	44.08	5.35
32 adults from southern Sonora (*bangsi*)	58.10	57.77	9.85	6.66	17.85	1.99	12.65	6.21	44.83	42.18	2.69
Females											
9 adults from Arizona (*carpalis*)	59.66	61.81	9.81	6.99	18.58	2.03	12.88	6.58	45.29	43.03	2.26
10 adults from southern Sonora (*bangsi*)	56.84	56.72	9.52	6.61	17.78	1.94	12.16	5.78	43.36	42.56	.55

EXTREMES OF MEASUREMENTS.

Males											
12 adults from Arizona and northern Sonora (*carpalis*)	61.4—64.2	61.5—65.6	9.8—10.6	7.3—7.6	18.9—20.5	2.0—2.4	12.7—14.2	6.75—7.15	47.1—52.4	41.9—47.1	
32 adults from southern Sonora (*bangsi*)	55.3—61.2	52.1—61.8	8.9—10.5	6.4—6.8	16.4—18.9	1.85—2.17	11.9—13.3	5.40—6.95	41.95—47.9	39.4—45.0	
Females											
9 adults from Arizona (*carpalis*)	57.1—61.5	59.85—64.2	9.2—10.5	6.5—7.65	18.1—19.55	1.85—2.2	11.8—13.75	6.1—7.3	43.7—46.65	41.0—44.6	
10 adults from southern Sonora (*bangsi*)	55.7—58.1	54.1—60.9	9.0—10.4	6.35—7.00	17.05—19.0	1.7—2.05	11.5—12.7	5.45—6.4	41.7—45.5	41.3—44.2	

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A NEW SPECIES OF TREE PARTRIDGE FROM SZECHUAN, CHINA.

BY RUDYERD BOULTON.[1]

Included in the last shipment of birds of the Marshall Field Chinese Expedition of Field Museum was the unique specimen of a remarkable tree partridge described below. I am indebted to Mr. H. B. Conover of Field Museum and to Mr. James L. Peters of the Museum of Comparative Zoology for examining this specimen and comparing it with series in their collections.

Arborophila rufipectus, new species.

Type.—from Ta Cho Fu (Lat. 29° 20′ N., Long. 102° 45′ E.), Western Szechuan, China; adult male; February 5, 1932; collected by F. T. Smith, Marshall Field Chinese Expedition; Field Museum No. 85786.

Diagnosis.—Resembles *A. torqueola* in size and general color pattern, but forehead white, crown, nape and sides of neck ochraceous-orange streaked with black, chest hazel or russet.[2]

Description.—Lores, anterior half of the face, inter-ramal area and superciliary stripe black, feathers of the latter edged with white posteriorly. Chin and throat black, each feather edged with white; lower throat white; upper breast hazel or russet; lower breast and belly white; sides of the breast and flanks neutral gray with a brownish cast, most of the feathers margined broadly on both edges with chestnut or russet, an occasional obsolete white "mirror" next to the shaft on the distal third of the feather; tibiae deep grayish olive, merging to russet distally; under tail coverts black tipped with white. Anterior portion of the forehead black, followed by a white band 7 mm. in width; crown, nape and sides of the neck ochraceous-orange, each feather with a median streak of black; ear-coverts ochraceous-orange; back, rump and upper tail-coverts barred with black and a pale greenish gray, nearest to tea green or vetiver green, the black predominating on each feather and also when the appearance of the back is considered as a whole. Alula, primaries, secondaries and

[1]Published by permission of the Director, Field Museum of Natural History.

[2]All colors compared with Ridgway's "Color Standards and Nomenclature," 1912.

greater wing-coverts dark fuscous black, vermiculated and margined with chestnut; median and lesser wing-coverts and tertiaries tea green, vermiculated with dusky, margined with chestnut and some of the feathers tipped with black. Rectrices black with four or five irregular bars of tea green. Bill (in dried skin) black; legs and feet dark olivaceous brown. Wing, 156 mm. Tail, 60 mm. Exposed culmen, 17.5 mm. Tarso-metatarsus, 46 mm.

Remarks.—This species is evidently very distinct with no near relatives. It combines characters of several different species in a most interesting way: the general pattern of coloration of *torqueola;* the reddish brown chest of *mandellii;* the white forehead of *gingica;* the streaked crown of the *atrogularis* group. It is slightly larger than any of the eight species of the genus with which it has been directly compared.

Chicago, Illinois.

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GENERAL NOTE.

A NEW NAME FOR ODONTOPHORUS CAPISTRATUS TODD.

Mr. James L. Peters calls my attention to the fact that my lately described *Odontophorus capistratus* (*cf.* these Proceedings, *antea*, page 215) is invalidated by *Ortyx capistrata* Jardine and Selby, 1828, now considered a synonym of *Odontophorus capueira* (Spix). To remedy this inexcusable inadvertence I now propose to call the new species

Odontophorus loricatus,

with the same type-specimen. —*W. E. Clyde Todd.*

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New names are printed in **heavy type.**