

Lower incisors small, subequal, tricuspid, not overlapping. Lower premolars subequal, closely pressed together.

Dimensions of the type (measured in spirit):—

Forearm 34·5 millim.

Head and body 58; tail 32; head 17; ear 14; tragus on inner edge 2·6; third finger, metacarpus 31, first phalanx 10, second phalanx 9·5; fifth finger, metacarpus 25·5, first phalanx 5, second phalanx 3; lower leg 14; hind foot, including claws, 9·3.

Skull: greatest length 14·7; zygomatic breadth 11; depth of nasal notch 3·2; breadth across supraorbital projections 8·3; breadth of brain-case 8·5; front of canine to back of  $m^3$  4·6.

*Hab.* Albert Edward Range, Central New Guinea. Alt. 6000 feet.

*Type.* Old male. B.M. no. 1. 11. 24. 11. Collected by Mr. H. S. Rohu. Ten specimens examined.

XXXVIII.—*On Mammals collected by Mr. Perry O. Simons in the Southern Part of the Bolivian Plateau.* By OLDFIELD THOMAS.

AFTER making the collection from round Cochabamba worked out in the last number of the 'Annals,' Mr. Simons travelled to the barren and desolate country forming the provinces of Oruro and Potosi, and to Sucre, and collected what mammals he could. As might be expected from the character of the country, he did not obtain very many species, but what he did get are of much interest, for this country had not been at all worked before. Mr. Bridges, nearly sixty years ago, had skimmed its eastern borders; Philippi has described species from Atacama on the west; Mr. Gustav Garlepp had, at Sahama, collected some of the species now sent by Mr. Simons; but no one has hitherto recorded specimens from the middle of the plateau, from the dreary area round Lake Poopo, or eastwards in Potosi and Sucre.

Over the main part of this area, not unnaturally, the fauna is very uniform, considerable as is the distance between its extreme ends. But the specimens collected by Mr. Simons on the Pampa Aullaga, to the west of Lake Poopo, are mostly different from the rest, and agree with species obtained by Mr. Garlepp near Mount Sahama, or with others from further north-westward.

Of the novelties the most interesting are the two new genera *Neotodon* and *Andinomys* described elsewhere, the



former being an animal evidently conspicuous and widely distributed. Then there is a *Phyllotis* with hairy gerbille-like soles, quite a new departure in the group, and a new *Ctenomys*. Altogether this collection, though disappointing to Mr. Simons himself, owing to its small extent, proves scientifically to be of very considerable value.

The following extracts from Mr. Simons's notes may be of interest as illustrating the nature of the country:—

"*Potosi*.—From the summit of Potosi Peak the outlook is brown, barren, rough and crisp, like the people. To the north the peaks and ridges disappear away in the blue haze. The eastern view is closed by the Cari Mt. Range, whose summits are grey and are flanked by decomposed soil. The intervening area is full of cañons and moraines of granite boulders, at the end of which stands the Red City.

"*Sucre*.—From the summit of the mountain S.E. of Sucre one sees the entire horizon at a great distance as a great circular range of mountains, and all inside the circle as a brown, barren, rough waste, badly eroded and cut, with cañons extending in every direction.

"Mount Pampa Aullaga is a grey talc, with plenty of scorïæ scattered about. Its base is sandy and cultivated. It was apparently formerly a volcano, and the town is now in its crater.

"On all the eastern slope of the Andes there seems to be a belt or zone at about 2500 m. in which there are few or no animals. I noticed this first when going in to the Inambari (S.E. Peru) and at all the places where I have entered the montaña since. The Indians of the sierra will not go into the lowlands, nor will those of the lowlands go up."

### 1. *Conepatus arequipæ*, Thos.

♀. Pampa Aullaga, 3800 m.

Closely similar to the original specimens, and equally different from the remarkable *C. rex*, of Sahama.

### 2. *Eligmodontia domorum*, Thos.

♂, 2 ♀. Sucre, 2700 m.

3 ♂, 2 ♀. El Cabrado, 3700 m.

In some of these specimens the belly-hairs are white to the roots. Their skulls all have the small bullæ which distinguish *E. domorum* from *E. cachina*.

### 3. *Phyllotis boliviensis*, Waterh.

2 ♀. Livichuco, 4500 m.

3 ♂, 3 ♀. Potosi, 4400 m.



Quite similar to the many specimens that have been received from Bridges, Hunt, Kalinowski, Garlepp, and others from localities north-westwards to Caylloma, Peru.

4. *Phyllotis arenarius*, sp. n.

♀. Oruro, 3700 m.

3 ♀. Lagunillas, 4000 m.

♂. El Cabrado, 3500 m.

♂ ♀. Sucre, 3000 m.

♂ ♀. Potosi, 4000 m.

2 ♂, 4 ♀. Uyuni, 3670 m.

Size and general characters about as in *Ph. lutescens*, but coloration that of desert animals. Fur long, soft, and fine; hairs of back about 15 millim. in length. General colour above pale fawn, lined on the back with dark brown; sides clearer and more buffy, the buffy often forming a clear lateral line edging the ventral white. Under surface white, either pure white or faintly tinged with buffy, not sharply defined laterally; the hairs everywhere dark slaty basally. A small bright buffy spot often present on each side of the chest. Face pale greyish, with scarcely any buffy tinge. Ears fairly large, pale brownish, not contrasting with head. Upper surface of hands and feet pure white. Tail well haired and more or less pencilled at the tip, its upperside fawn, darkening terminally to dark brown; sides and under surface white.

Skull in size and shape closely similar to that of *Ph. lutescens*.

Dimensions of the type:—

Head and body 118 millim.; tail 114; hind foot, s. u. 26, c. u. 27; ear 26.

Skull: greatest length 30; basilar length 23.2; greatest breadth 14.5; nasals  $13 \times 3.7$ ; interorbital breadth 3.7; breadth of brain-case 12.8; palate length 13.1; diastema 8.2; palatal foramina  $7.5 \times 2.5$ ; length of upper molar series 4.9.

*Hab.* Sandy plateau of Bolivia. Type from Uyuni. Alt. 3670 m.

*Type.* Old male. B.M. no. 2. 2. 2. 34. Original number 1671. Collected 4th November, 1901.

This *Phyllotis* is evidently the representative of the *Ph. Haggardi-lutescens* group in the desert parts of the Bolivian plateau. Besides the specimens above enumerated Mr. Simons had already sent, in a previous consignment, examples apparently referable to it from the desert-region near Arequipa, at the north-western end of the same faunal area.



5. *Phyllotis hirtipes*, sp. n.

3 ♂, 1 ♀. Oruro, 3700 m.

♂, 2 ♀. Challapata, 3800 m.

♀. Pampa Aullaga, 3800 m.

Size small; fur soft and fine, hairs of back about 11 millim. in length. General colour bright sandy buff, indistinctly lined on the back with brown. Sides brighter buff, a line almost matching Ridgway's "pinkish buff" edging the white of the belly. Under surface pure snowy white, the hairs white to their roots\*. Face but little greyer than back. Ears pale greyish, the back of their anterior halves rather browner. Upper surface of hands and feet pure white. Palms (except pad at base of pollex) and soles thickly clothed with stiff white hairs, the pads being obsolete, the whole structure being just as in the African *Gerbillus*, subgenus *Gerbillus*, and showing a precisely similar adaptation to desert life; tips of digits naked. Tail about the length of the head and body (ranging from 10 millim. shorter to 7 millim. longer), hairy, finely pencilled, whitish throughout, on the upperside slightly darker terminally.

Skull much as in the other small species of the group; interorbital region narrow, flattened into sharply square but unbeaded edges, which strongly diverge posteriorly; no trace of parietal ridges. Front edge of zygoma-root not hollowed out. Palatal foramina reaching to the level of the anterior lamina of  $m^1$ .

Dimensions of the type:—

Head and body 90 millim.; tail 97; hind foot, s. u. 24, c. u. 25; ear 20.

Skull: greatest length 25·3; basilar length 20; greatest breadth 13·5; nasals, length 9·8; interorbital breadth 4; breadth of brain-case 12; diastema 6·8; palatal foramina 5·9; length of upper molar series 3·8.

*Hab.* Neighbourhood of Lake Poopo. Type from Challapata, 3750 m.

*Type.* Male. B.M. no. 2. 2. 2. 43. Original number 1657. Collected 29th October, 1901.

This most interesting little mouse rivals *Ph. gerbillus* in the adaptation of its coloration to desert conditions and exceeds it in its resemblance to the more typical gerbilles by the hairiness of its palms and soles, in which character it is unique in the group.

6. *Andinomys edax*, Thos.

P. Z. S. 1902 (Feb. 18th). Abstract in 'Nature.'

♂ ♀. El Cabrado, 3500 m.

\* Philippi's "*Mus capito*" has only "the points" of the belly-hairs white, their bases being presumably slaty.



This animal looks like a large *Phyllotis* or soft-haired *Oryzomys*, and it is not until its hypsodont complicated teeth are examined that its peculiarity appears. In this respect it differs from its ally *Chinchillula*, whose external appearance is as striking as its teeth.

7. *Euneomys sublimis*, Thos.

♂ ♀. Livichuco, 4550 m.

Like *Ctenomys opinus* and *Phyllotis boliviensis* this species ranges north-westwards from the present locality to Caylloma, Peru.

8. *Akodon albiventer*, Thos.

2 ♂, 1 ♀. Challapata, 3750 m.

7 ♂, 3 ♀. Potosi, 4400 m.

♂ ♀. Uyuni.

9. *Akodon Berlepschi*, Thos.

3 ♀. Pampa Aullaga, 3800 m.

Widely as the original specimens of *A. albiventer* and *Berlepschi*, from Cachi and Sahama respectively, differ from each other, a study of the present series shows that they are more nearly allied than I had supposed. Unfortunately the majority of the new specimens are in more or less bleached pelage, and it is only where patches of fresh fur are present that the proper colours can be observed. Of the three from Pampa Aullaga one only has fresh fur, and that only on the anterior two thirds of the body; but so far as this goes the agreement with the type is exact, and these specimens should no doubt be referred to *A. Berlepschi*. But the difference between the two forms narrows itself down to a question of the shade of grey—clear dark cinereous in *Berlepschi*, lined isabella in *albiventer*; and in the series of the latter there are such approximations to the former, that it is by no means improbable that the two will be found to intergrade completely, in which case *A. Berlepschi* will have to be considered as a subspecies of *A. albiventer*.

10. *Akodon Spegazzinii*, Thos.

♂. Lagunillas, 4000 m.

2 ♂, 1 ♀. Potosi, 4300 m.

More olive and less rufous than the type, from Cachi; but the fact that that had been skinned out of spirit would account for the difference.



11. *Neotodon Simonsi*, Thos.

P. Z. S. 1902 (Feb. 18th). Abstract in 'Nature.'

3 ♂, 2 ♀. Oruro, 3700 m.

♂ ♀. Challapata, 3800 m.

2 ♂, 2 ♀. Livichuco, 4500 m.

♀. Potosi, 4400 m.

This handsome *Neotoma*-like animal, whose grey colour, snowy-white belly, and bushy tail give it an exceedingly striking appearance, has been described elsewhere. It is one of the most interesting discoveries made by Mr. Simons.

12. *Ctenomys opimus*, Wagn.

3 ♂, 6 ♀. Oruro, 3700 m.

♂, 3 ♀. Challapata, 3750 m.

♂, 2 ♀. Pampa Aullaga, 3800 m.

♂, 4 ♀. Potosi, 4300 m.

♂. Livichuco, 4500 m. ("*nigriceps*").

This species is evidently the common Tuco-Tuco of all the region covered by the present collection, and it also goes northwards to Lake Titicaca, while in Atacama and Tarapacá several of the forms described by Philippi are probably referable to it.

The species is a variable one as to colour, specimens from the same locality showing a considerable range of variation in the depth and tone of the yellow, which may be either more buffy or more drab. The latter will perhaps prove characteristic of the females.

In addition, one specimen, that from Livichuco, is coloured absolutely as in my *C. o. nigriceps*, originally from Titiri, W. of Titicaca. Unfortunately no other Livichuco examples were obtained, and I am therefore unable to express an opinion as to whether this dark form, whose skull is indistinguishable from that of *C. opimus*, is there locally constant, as at Titiri. The distribution is very curious, as the two places are separated by regions inhabited by true *opimus*, a fact which suggests that *nigriceps* may be only a "plumbeous phase" of *opimus*, as occurs in the Geomyidæ. But the identity of the four Titiri specimens *inter se* is against this, and the solution of the problem must therefore await further material.

In old skulls of this species the peculiar additional process external to the condyle of the lower jaw (for which the name of ectocondylar process might be used) is particularly well developed. When the mandible is at its most posterior position during the fore-and-aft motion this process articulates with, or at least impinges on, the front face of the bony



meatus, so that in these animals there may be said to be a second articulation between the mandible and cranium.

13. *Ctenomys frater*, sp. n.

*a, b.* ♂ ♀. Potosi, 4300 m. 28th September, 1901.

Size medium, decidedly smaller than in *C. opimus*, the common species of the district. General colour brownish fawn, rather browner than Ridgway's "fawn-colour." Under surface dull buffy, without white patches, the inguinal region with a tinge of rufous; line of demarcation on sides not defined. Muzzle and chin blackish. No darker markings on or around ears. Hands and feet thinly haired, pale brownish. Tail very finely haired (almost naked in the type), brown above, whitish beneath and at the end.

Skull short and stumpy, high, with its profile flat from the middle of the nasals to the middle of the parietals, and then markedly and unusually convex, the posterior half of the brain-case bent downwards. Nasals short, broad, broadest at their middle, narrowing both forwards and backwards, scarcely surpassed posteriorly by the premaxillary processes. Interorbital region flat, its edges sharply cut, with quite rudimentary postorbital processes. A narrow longitudinal median fontanelle present in both specimens at the hinder end of the frontals. Bullæ very peculiarly shaped, narrow, little inflated, their outline slightly concave forwards; their bony meatus very long and slender (see measures below). Ectocondylar process of lower jaw small, inconspicuous.

Incisors broad and heavy, their combined breadth 7·3 millim., dark orange above and below. Molars with the usual antero-external and posterior gaps in their enamel envelope more extended than in *C. opimus*, less than in some of the smaller species.

Dimensions of the type:—

Head and body 180 millim.; tail 73; hind foot, s. u. 35, c. u. 39; ear 9.

Skull: greatest length in middle line, excluding incisors, 46; basilar length 38; greatest breadth 31; nasals  $17 \times 8$ ; interorbital breadth 10·5; least breadth across brain-case 19; posterior breadth on meatus 30·5; palate length 21; diastema 12·5; bulla, greatest diagonal diameter 15·5, lesser diameter at right angles to last 6·6; tip of meatus to postero-internal side of bulla 12·3; upper tooth-series (alveoli) 10·7. Lower jaw, greatest breadth 40.

*Hab.* as above.

*Type.* Adult female. B.M. no. 2. 2. 2. 113. Original



number 1599. Collected 28th September, 1901. The second specimen is younger and still in the plumbeous pelage.

This Tuco-Tuco may be readily distinguished from any species known to me by the shape of its nasals, the marked convexity of its parietal profile, and the peculiarly narrow bullæ. Externally it resembles *C. Perrensi* and *tucuminus* in general colour, though it has no white on its under surface.

None of Philippi's Atacama or Tarapacá species appear to be related to it. *C. pernix*, the only one of about the right size, is said to have a white belly.

Mr. Simons labels his specimens as caught "in ground in moist sand," while the Potosi representatives of *C. opimus* were taken "in sandy place on ridge," "in decomposed trachyte soil on ridge." Probably the two species do not live on quite the same ground.

#### 14. *Lagidium* sp.

♂. Potosi, 4400 m.

This may represent Philippi's *L. lutescens*.

#### 15. *Kerodon boliviensis*, Waterh.

♂. Livichuco, 4500 m.

♂ ♀. Sucre, 2700 m.

♀. El Cabrado, 3500 m.

2 ♂. Potosi, 4400 m.

This species does not appear to occur in the pampas region west of Lake Poopo, where it is replaced by *K. niata*.

#### 16. *Kerodon niata pallidior*, subsp. n.

♂, 2 ♀. Pampa Aullaga, 3700 m.

? ♀. Sevaruya, 3720 m.

"The Cuis of Pampa Aullaga are quite different to any others I have seen. Their hair does not fall out so easily, and they make a faint short whistle when they dodge into their holes."—*P. O. S.*

Similar to the typical Sahama form in every respect, but paler throughout, the general tone a yellowish cream-colour, the fore back, region round ears, and face being but little darker than Ridgway's "cream-colour." Caudal region bright yellow.

Dimensions of the type:—

Head and body 200 millim.; hind foot, s. u. 38, c. u. 41; ear 22.

Skull: greatest length 46.5; basilar length 35.5; zygomatic breadth 32; length of upper molar series (alveoli) 12.



*Hab.* Pampa Aullaga. Alt. 3700 m.

*Type.* Female. B.M. no. 2. 2. 2. 81. Original number 1642. Killed 21st October, 1901.

The specimen from Sevaruya, a place I fail to identify, but not on the Pampa Aullaga, is rather darker than the Pampa ones, representing an intermediate colour between these and the typical Sahama series.

17. *Marmosa elegans*, Waterh.

2 ♂, 4 ♀. Challapata, 3700 m.

♂ ♀. Sucre, 3000 m.

XXXIX.—*Contributions from the New Mexico Biological Station.*—XII. *On some Genera of Bees.* By T. D. A. COCKERELL and EMERSON ATKINS.

THE family Stelidæ of Ashmead consists of a series of parasitic bees which can hardly be grouped together in a classification based on actual blood-relationship. The subfamily Stelidinae appears to be an offshoot from the Anthidiinae; while it has been suggested that the other subfamily, Cœlioxinae, is similarly related to the Megachilinae. The Cœlioxinae, however, appear to be a composite group, *Cœlioxys* and its allies being close to *Megachile*, while the genera with 4- to 6-jointed maxillary palpi must be referred to quite another series.

*Dioxys* (*Hoploposites*) *producta*, var. *subrubra* (Ckll.).

*Labial palpi.*—1 \* longer than 2; 3 + 4 less than half length of 2.

*Maxillary palpi.*—Apparently 2-jointed; 1 oval, much longer than broad, 2 minute. There is presumably a basal tubercle, representing the true first joint, so that the palpi are properly 3-jointed.

*Galea.*—Slender, falciform, with transverse striæ; inner margin ciliate.

Mr. Ashmead states that *Hoploposites* is distinct from *Dioxys*, but no distinctive characters have been pointed out, nor have we found them.

The transverse striæ on the galea are noteworthy, as they do not occur in the supposedly allied genera *Cœlioxys* &c., but do occur in *Heriades* and *Chelostoma*.

\* In this paper the figures in the descriptions of the palpi are to be understood to refer to the joints: thus, 1 = first joint.





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