SCIENTIFIC RESULTS

OF

THE SECOND YARKAND MISSION;

BASED UPON THE COLLECTIONS AND NOTES

OF THE LATE

FERDINAND STOLICKZA, PH.D.

MAMMALIA,

BY

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(CHIROPTERA BY G. E. DOBSON, M. A., M. B.)

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The upper parts in the Gilgit sldn are brown, the long hairs being pale towards the tips; the woolly under-fur is white at the base, rieh brown towards the ends. The naked patch on the muzzle, between the nostrils, is produced into an obtuse point in the middle below; above it is higher in the middle and over each nostril, and has a concave margin between. Length of head and body 34, tail 17"8 : these measurements being those of a dried skin are of course of small value.

Prejevalski notices the occurrence of an otter, which he calls *Lutra vulgaris,* on all lakes containing fish in abundance in the neighbourhood of Lob-nor.

Family— *URSIDIE.*

24. URSUS, sp.

Although the circumstance is not mentioned in Dr. Stoliczka's diary, I am informed by both Captain Bidclulph and Captain Trotter that traces of bears were seen on the Pamir. The species here occurring may very possibly be the pale-coloured form described by Severt-zoff as inhabiting the Thian Shan, and named by him 77. *leuconyx}* It is doubtful whether tills form is identical with the Himalayan 77. *isabellinus,* or whether it is a pale 77. *arctos,* as 77. *isabellinus* itself is thought to be by some naturalists. Between the Himalayan area and the Pamir there is a broad tract in the Indus valley in which no bears are known to occur.

According to Prejevalski[2] there are two different kinds of bears on the Thian Shan, the one dark brown, with white claws, supposed to be 77. *leuconyx,* the other a much paler animal, found only on high, treeless plateaux, and identified by Prejevalski with 77. *isabellinus.* Apparently no comparison of these forms, by means of skulls, has been made, and the colouration may vary with the locality.

Order RODENTIA.

Family—*SCIURIDAE.*

25. PTEROMYS INORNATUS.

Geoffr., Jaequemont, Voyage dans l'lnde, iv, Zoologie, Mammiferes, p. 6£*;* Atlas, ii, PI. IV.

1, Sonamarg, Kashmir.

The original figure of this species differs much in colouration from all specimens that I have seen, being much too pale, and showing nothing of the grizzled back.

26. ARCTOMYS AUREUS. Pis. XI, XIa.

W. Blanf. J. A. S. B., 1875, xliv, Pt. 2, pp. 106, 123.

? A. caudatus, Severtzoff, Turk. Jev., pp. 61, 81; Ann. Mag. Nat. Hist., July, 1876, Ser. 4, Vol. xviii, p. 50, *nee* Jaequemont.

A. *aureo-fulvus, clorso nigro lavato, capite antice fulvescenti-cano, maculo fuseo ad rostri extremitatem signato, ventre interdum leviter ferruginescente, Cauda tertiam partem*

[1] Turk. Jev. p. 80; Ann. Mag. Nat. Hist., July 1876, Ser. 4, Vol. xviii, p. 43,

[s] Pet. Mitth. Erg. hit., No. 53, p. 3: Prom Kulja, &o,, p. 38.

corporis capltisque cequante,fulvci, nigro breviter terminatd; pills elongatis corporis omnibus-ad basin fuscis. Long, a rostro ad basin caudce circiter 18 (in corio dessiccato), caudce vertebrarum 6, palma? 2', plantce fere 8, cranii 3'7 poll.

1, 2, 3, skins; 4, 5, skulls, Kaskasu pass, 13,000 feet high, on the road from. K&sbghar to Sarikol and the Pamir.

General colour tawny to rich brownish yellow, the dorsal portion conspicuously tinged with black from all the hairs having black tips, but these are far more conspicuous in some specimens (? males) than in others ; face grey to blackish with a rufous tinge, covered with black and whitish hairs mixed, about half an inch long on the forehead. The black hairs on the face are more prevalent in those specimens (perhaps males) which have the blackest backs; the middle of the forehead is, in some cases, more fulvous. On the end of the nose is a blackish-brown patch, and there is a narrow band of black hairs with a few white mixed round the lips ; the sides of the nose are paler; whiskers black. Hairs of the back 1^ to If inches long, much mixed with woolly fibres, dark slaty at the extreme base for about J inch, then pale straw colour, becoming deeper golden-yellow towards the extremity, the end black. In the blackest specimens the black tips are wanting on the posterior portion of the back. Tail yellow, the same colour as the rump, except the tip, which is black for a length varying from an inch to about *2%* inches (in 3 specimens out of 4 it does not exceed an inch) ; hairs of the tail about 2 inches long, brown at the base. Lower parts rather browner and sometimes with a rufous wash, the hairs shorter and thinner, chocolate brown at the base, without the short woolly underfur, which is very thick on the back. Feet above yellowish tawny like the sides.

The lengths measured on the dried skins are—

Nose to insertion of tail	16 ½ to 18 ½ inches.
Tail	5 to 6 ½ "
Hairs at the end	1½ to 1¾ "
Fore-foot (palma) measured to the end of the toes, but not including the claws	2.1
Middle toe without claw measured below	0.8
Claw measured above	0-6
Hind-foot (planfca) similarly measured	2.9
Mid toe without claw	0.8
Claw	0.52

This is a much smaller species than *A. caudatus;* the tail is rather shorter in proportion, and is paler in colour, with less black at the end. The animal is also distinguished by the absence of the ferruginous tinge on the legs, and the underparts generally are much less rufous. It is a very different species from *A. himalayanus (A. bobac* of several authors), being smaller, much more yellow and less grey in colour, with a longer tail.

Of all the Himalayan species it agrees best with *A. hemaehalanus,* Hodgson, but the latter is a yet smaller form with shorter tail, shorter hair, and different in colour, being described as " dark-grey with a full rufous tinge, which is rusty and almost ochreous red on the sides of the head, ears, and limbs." Now *A. aureus* cannot be called dark-grey, and in the specimens obtained the ferruginous tint is confined to the abdomen. The skin and skeleton of a marmot from Sikkim in the old Asiatic Society's collection *(O, Ca,* of the list in Blyth's catalogue) belong, I believe, to *A. hemaehalanus.* The skull differs widely from that of *aureus,* being smaller and much shorter in proportion to its length, besides numerous minor

differences. The skin too differs much in colour, being far greyer, and the tail is considerably shorter. Some other specimens have since been obtained in Calcutta, and I have seen a living animal in captivity at Darjiling. Singularly enough, out of 6 specimens known to me, and 4 that I have personally examined, not one was wild,—all had been kept in confinement. Still as all agree well in characters, there can be no question that the species is well marked and distinct.[1]

A. baibacinus, Brandt, is a very much smaller animal, the skull measuring only 43 millemetres,[2] and it has a short tail like *A. himalayanus,* not more than a quarter the length of the body.

The skull of *A. aureus,* though very much smaller, approaches that of *A. caudatus* more nearly than any of the other Himalayan marmots. The zygomatic arch in the latter, however, is nearly twice as deep and convex below, whilst that in *A. aureus* is nearly straight, and the nasal bones are broader behind in *A. caudatus.* The pterygoids are very differently shaped in the two species. The following are the dimensions of an adult skull of *A. aureus :—*

	Metre.	Inches.
Length from occipital plane to anterior end of nasals . . .	.094	3·7
Breadth across widest part of zygomatic arches	.057	2.25
Do. behind postorbital processes	.017	0·65
Length of nasal bones.....	.038	1 5
Breadth of do. in front	.0165	0.64
Do. do. behind	.0105	0.42
Length of molars in tipper jaw taken together	.020	0·82
Length of lower jaw from angle to symphysis	.066	2.6
Height of do. at coronoid process	.035	1.4

I learn from Captain Trotter that *A. aureus* was seen abundantly on the return journey from the Pamir to Yarkand in May about the Kaskasu and Torat passes, at an elevation of 11,000 to 13,000 feet. On the outward journey towards the end of March, none had yet come out of their holes.

The species identified with *A. caudatus* by Severtzoff can, I think, scarcely be that species, and the very few characters given agree with *A. aureus.* The animal is said to have been "yellow with fine black, longer hair, the head was darker and blackish." Length from the tip of the nose to the root of the tail 14 inches 2 lines, tail 8 inches 5 lines. This is

[1] For a dissertation on the species of marmot inhabiting the Himalaya, Tibet, and adjoining regions, see J. A. S. B., 1875, vol. xliv, Pt. 2, p. 113. I have there shown that independently of *A. aureus,* and of *A. diclirous* (Anderson, Ann, Mag.Nat. Hist., October, 1875, Ser. 4, vol. xvi, p. 283, three species inhabit the Himalayas or Tibet, viz., *A. caudatus, A. himalayanus,* and *A. hemaehalanus.* Dr. Sclater has since pointed ont to me that the two last names are, in fact, identical, and that consequently one must be changed. I would gladly retain *A. hemaehalanus* and alter *A. himalayanus,* as was proposed by Hodgson himself, to *A tibetensis* ; but I fear this would be opposed to the laws of nomenclature, as *A. himalayanus* was the name first given, and moreover it would lead to confu sion, for the name *A. tibetanus* has been adopted in the British Museum for *A. hemaehalanus.* On the other hand, to follow the British Museum nomenclature would be ridiculous, for *A. himalayanus* is the Tibetan species, and is the original *tibetensis* ot Hodgson, not *A. hemaehalanus.* Under these circumstances, I see no other resource than to propose a new name for *A. hemaeha lanus,* and I think it should be called after its discoverer. The synonymy would then stand thus :

A. HODGSONI.

A. hemaehalanus, Hodgson, J. A. S. B., 1843, xii, p. 410. "
A. tibetanus Hodgs." Gray, Cat. Mam. Birds Nepal, p. 24 (1846); 2nd edition, p. 12, (1863), *nee A. tibetensis,* Hodgs. J. A. S. B., 1843, xii, p. 409.
" *A. bobac,* Schreb." partira, Blyth, Cat. Mam. Mus. As. Soc, p. 108 (1863), *nee* Schveher.
" *A. hemaehalanus,* Hodgson," Jerdon, Mam. Ind., p. 182 (1867). W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 122.

[2] A. Milne Edwards, Eeeh. Mam., p. 312.

far too small for *A. caudatus.* The locality whence Severtzoff's only specimen, since lost, was procured, was "south of the Aulje-ata, in the mountain chains between Tallas and Chirchik." This is north of Khokand and about 350 miles north-west of the Kaskasu pass, which again is at least 200 miles north of any place known to be inhabited by *A. caudatus.*

Arctomys dichrous? from the mountains of Cabul, is a very different species from *A. aureus,* being much less yellow, without any black on the back, and having the upper parts pale dull tawny and the lower parts rufous brown. It appears also to be a smaller animal. In the Indian Museum there is a skull of a marmot,[2] brought by Sir A. Burnes from Oabul, and much resembling that of *A. aureus.* It is however distinguished by being broader across the zygomatic arches, by having much broader and differently shaped nasal bones, and by a few other differences. This skull may perhaps have belonged to an adult of *A. dichrous,* the typical specimens of which are immature, but it is impossible to determine this; the nasal bones are similar, but the skull of *A. dichrous* appears longer in proportion to the breadth, besides being very much smaller, although all the molars are through the jaw.

27. ARCTOMYS HYMALAYANUS. PLS. XII, XIIA.

Hodgson, J. A. S. B., 1841, x, p. 777.—W. Blanford, J. A. S. B., 1875, xliv, p. 121.
A. himalayanus, potius *tibetensis,* Hodgs., J. A. S. B., 1843, xii, p. 409.
"A. bobac, Scbreb./' partim, Gray, List Spec. Mam. Coll. B. M., 1843, p. 148.—Horsfield, Cat. Mam. I. H. Mus., p. 164 (1851).—Birth, Cat. Mam. Mus. As. Soc, p. 108 (1863).—Jerdon, Mam. Lid., p. 181 (1867).—Anderson, P. Z. S., 1871, p. 560.—*nee* Schreber.
A. tataricus, Jameson,[3] L'Instit. 1847, xv., p. 384.
"A. tibetanus, Hodgson/" Fitzinger, Sitzb. k. k. Akad. Wiss. Wien., 1867, lv, i, p. 491.—Adams, P. Z. S., 1858, p. 521.
A. robustus, A. Milne Edwards, Now. Arcb. Mus. Hist. Nat., vii, Bulletin, p. 92, (1870). Recherches Mamm., i, p. 309, PL XL VII, XLIX, fig. 2.
" *? A. baibacinus,* Brandt/' Severtzoff, Turk. Jev., p. 61, *nee* Brandt, *teste* Severtzoff, J. A. S. B., 1875, xliv, Pt. 2, p. 126; Ann. Mag. N. H., July, 1876, Ser. 4, xviii, p. 50, note.

Of this marmot no specimens were procured by Dr. Stoliczka during his last expedition, but I have examined the three brought from the Sanju pass in the KLuenlun range, south of Yarkand, by Dr. Henderson, and described by Dr. Anderson in the Proceedings of the Zoological Society, *I. c.* So far as I am able to judge, I quite concur with Dr. Anderson in assigning them to the species originally described by Hodgson from Tibet, and which was referred by Gray, Blyth, Anderson, and other writers, to *A. bobac.* It is, however, a much larger species than the *Bobac.*

I have already entered into the confused synonymy of this Himalayan and Tibetan marmot in the Journal of the Asiatic Society of Bengal *(I. c),* and need not recapitulate further than to point out that the species is probably the *A. tartaricus* of Jameson, the description of which I have been unable to consult, and the *A. robustus* of M. Milne Edwards from Eastern Tibet. The latter species, as figured in the *"* Recherches," appears

[1] Anderson, Ann. and Mag. Nat. Hist., October, 1875, Ser. 4, xvi, p. 283. %

[2] One of the specimens referred by Mr. Blyth to *Arctomys bobac* in his Catalogue of the Mammalia in the Museum Asiatic Society, No. 348 *M,* p. 109.

[3] This reference is quoted from Wiegman's "Archiv," no copy of the work named being available.

much more dark-coloured, but in a footnote attention is called to the fact that the plate has been over-coloured by the draftsman.

By the kindness of Mr. Mandelli of Darjiling, I have been enabled to examine specimens of *A. Himalayanus* from the portion of Tibet north of Sikkim. As this locality is at no great distance from Northern Nepal or the adjoining districts in Tibet, whence Mr. Hodgson's types were derived, it may fairly be inferred that Mr. Mandeili's specimens in all probability resemble those originally described. The skins differ but little from those . of Sanju; they are a little greyer in tint and darker in the face, but the distinction is trifling, and the dimensions appear similar. The skull of one of Mr. Mandeili's specimens measures 101 millimetres in length by 67 in breadth, and is consequently broader in proportion to its length than the Sanju skull, of which the measurements are given below, and which is figured on PI. XII«. The former is also rather less high, and the nasal bones are shorter and more convex. The skull of *A. robustus* again, as figured in the " Recherches," differs from the Sanju specimen in having a narrower frontal region and somewhat narrower and shorter nasals. It is probable that a larger series of these animals would show other cranial distinctions, for marmots live under the most favorable conditions for producing permanent varieties; each colony or group of families being isolated, and frequently at a distance of many miles from the next colony, so that the two, in all probability, rarely, if ever, breed with each other. I am disposed to think that it is most convenient to consider all these short-tailed Tibetan and Kuenlun marmots as varieties of the same species.

Dr. Severtzoff found a marmot in the eastern mountains of Russian Turkestan above an elevation of 4,000 feet, and at first identified the species with the *A. baibacinus* of Brandt from the Altai, but subsequently, in conversation with Mr. Dresser, suggested that the Turkestan form might be *A. robustus* of Milne Edwards. This opinion requires confirmation, no specimens having been compared so far as I know, but should it prove correct, the range of *A. Himalayanus (A. robustus)* must extend to the Thian Shan or its branches.

In a Sanju specimen of *A. Himalayanus,* the ears are barely f inch high from the orifice ; the fore-foot (palma) measures 2*5 inches without the nails; the hind-foot (planta) 3˙25.

The following are the dimensions of a skull:—

	Met.	Inches.
Length from occipital plane to anterior end of nasal bones . .	.105	4.13
Breadth across widest part of zygomatic arches	.066	2˙58
Do. behind postorbital processes	.0185	0.73
Length of nasal bones . , ...	.045	1.76
Breadth of do. in front , ...	.018	0.7
Do. do. behind	.010	0.38
Length of molars in upper jaw taken together	.024	0.95
Do. lower jaw from angle to symphysis , . . .	.068	2.7
Height of do. at coronoid process •	.043	1.7

Dr. Stoliczka mentions in his diary that *Arctomys bobac (A. Himalayanus ?)* was seen at Bimdi north of the Pangong lake in Ladak.

28. ARCTOMYS CAUDATUS. PLS. XIII, XIIIa.

Jacquemont, Voyage dans l'lnde, iv, p. 66, PI. V.—W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 122.
A. bobac, Adams, P. Z. S., 1858, p. 521, *nee* Schreber.
A. hemaehalanus, Anderson, P. Z. S., 1871, p. 561, *nee* Hodgson.

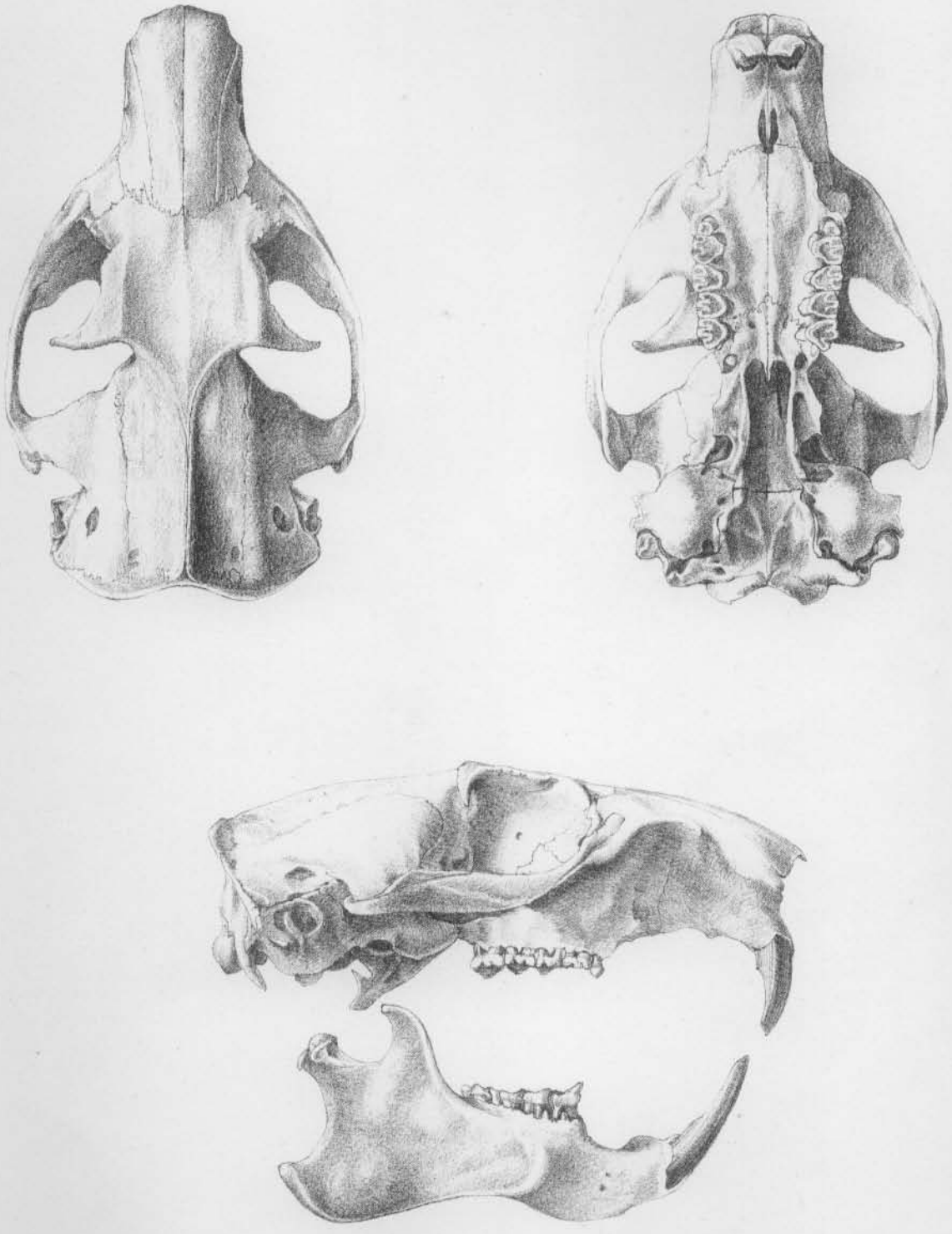
No specimen of this, the common marmot of Ladak, is included in Dr. Stoliczka's collections, but he had, I believe, obtained specimens in his former journey. I have already

In his paper on *Lagomys curzonice* Dr. Stoliczka[1] mentions that a marmot is found up to 17,000 feet in Ladak. The species was probably *A. caudatus.*

T. Smit del. et lith.

ARCTOMYS AUREUS.

Mintern Bros. imp.



Bekari Lal Das del.
H.H. Godwin-Austen lith.

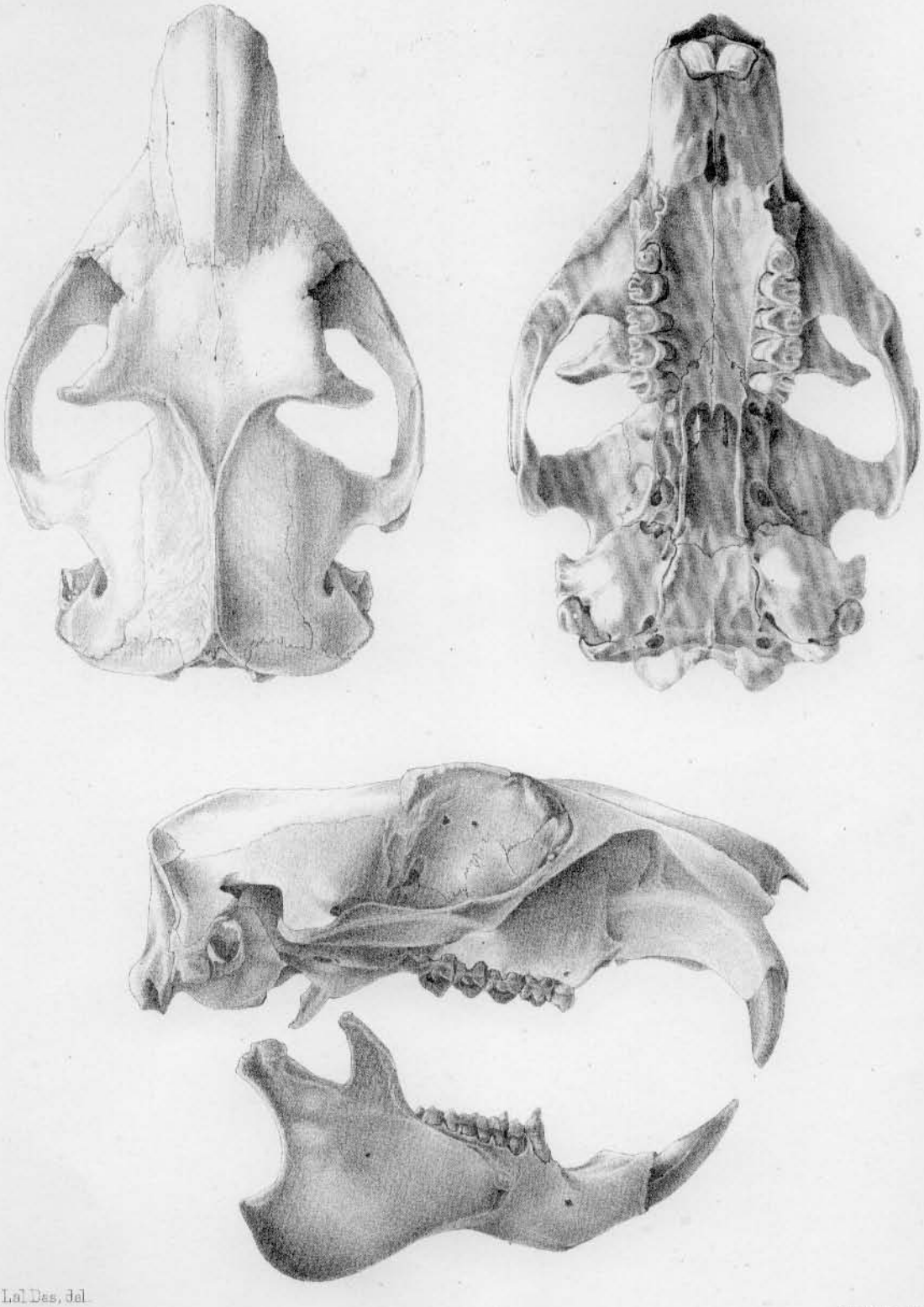
Maclure & Macdonald Imp.

ARCTOMYS AUREUS.

T. Smit. del. et lith.

Mintern Bros. imp.

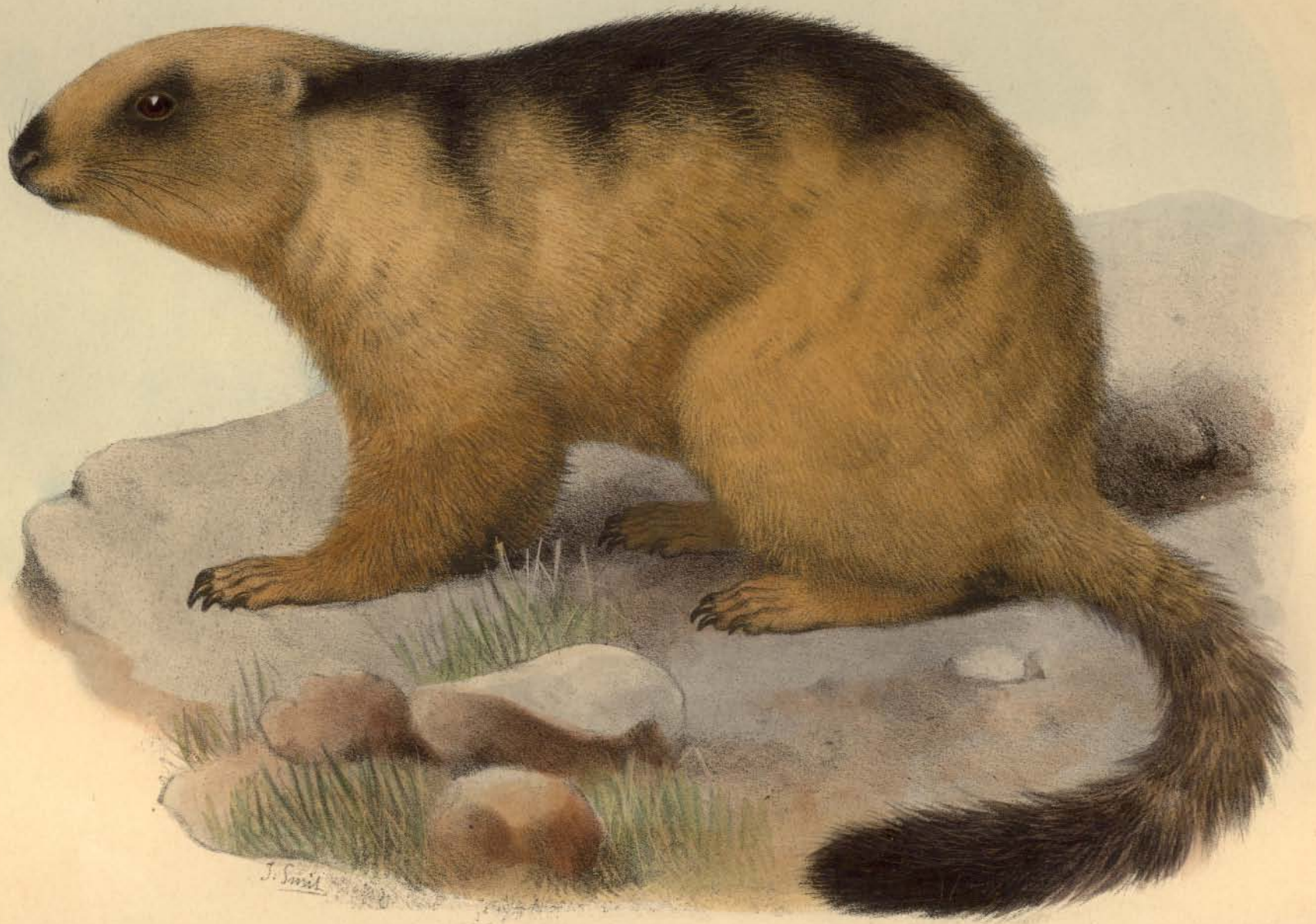
ARCTOMYS HIMALAYANUS.



Behari Lal Das, del.

Macnre & Macdonald, lith.

ARCTOMYS HIMALAYANUS.



J. Smit del. et lith.

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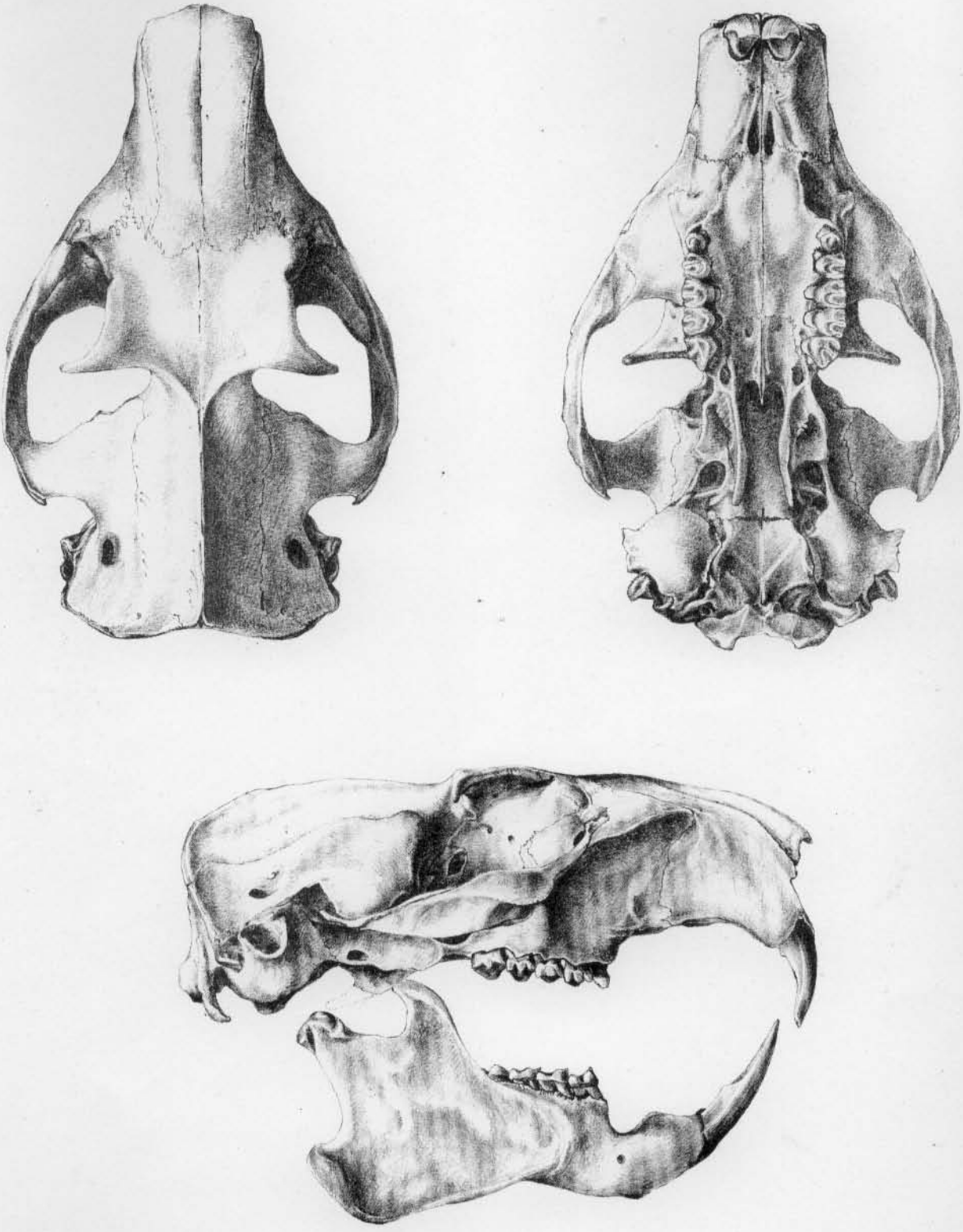
ARCTOMYS CAUDATUS.



Behari Lal Das, del.
H. H. Godwin Austen, lith.

Maclure & Macdonald, imp.

ARCTOMYS CAUDATUS