

form than *Galictis* is evident, not only from the dental features already mentioned, but from the normal absence of the second lower molar (*m.* 2) and likewise by the shortness of the tail and the disappearance of the ear-conchs; both the latter features being, of course, adaptations to a burrowing life. In connection with the absence of the second lower molar, it is interesting to note that in one specimen in the British Museum (No. 9.7.19.1) this tooth is retained on the left side. It is very small, like the corresponding tooth of *Galictis*, and had come into use before the carnassial was fully protruded, so that it would have been shed early.

Although *Galictis* is now unknown north of Mexico, or thereabouts, it occurs fossil in the later Tertiaries of the United States; and this leads to the idea that *Galictis* and *Mellivora* are divergent members of a common stock which, like the Leopard (*Felis pardus* and *F. onca*) and Ocelot (*F. pardalis*, *F. tristis*, and *F. nebulosa*) groups, once inhabited a large area in Asia, whence it reached America by way of Bering Strait, and, having made its way into South America, died out in the north of the New World.

15. On a Further Collection of Mammals from Egypt and Sinai. By J. LEWIS BONHOTE, M.A., F.L.S., F.Z.S.

[Received October 24, 1911: Read February 6, 1912.]

The following is an account of a small collection of mammals which has been sent home during the past two years by Capt. Flower. The most notable specimens are the *Meriones crassus* and *Acomys russatus* from Sinai, the type locality of these species. Apart from their extreme rarity in collections, the acquisition of these animals has enabled me to identify definitely the *Meriones* of Lower Egypt with Pomel's *M. sellysii* and also to describe the form found in the Sudan as a new race. The specimens of *Acomys russatus* prove to be quite different in size and colour from those obtained near Cairo by Mr. Nicoll and myself, which latter are therefore described under the name *A. r. aegyptiacus* \*.

I must express my indebtedness to Capt. Flower and Mr. Nicoll for their kindness in allowing me to work out the collection and more especially for bringing home some of the specimens alive, and thus enabling me to carry on some observations and experiments on which I shall hope to have something further to record in the future.

\* The complete account of these two new subspecies appears here; but since the names and preliminary diagnoses were published in the 'Abstract,' No. 103, 1912, they are distinguished by being underlined.—EDITOR.



## RHINOLOPHUS ACROTIS BRACHYGNATHUS K. Anders.

*Rhinolophus acrotis brachygnathus* K. Anders. Ann. Mag. N. H. ser. 7, vol. xv. p. 73 (1905); Bonh. P. Z. S. 1909, p. 788.

One specimen received from the Delta Barrage, 4th March, 1911.

## CROCIDURA (CROC.) RELIGIOSA Geoffr.

*Sorex religiosa* Is. Geoffr. Mém. Mus, xv. p. 128, pl. iv. fig. 1 (1827).

*Crocidura (Croc.) religiosa* Is. Geoffr.; de Wint. in Anders. Zool. Egypt, Mamm. p. 168 (1902); Bonh. P. Z. S. 1909, p. 790.

Two examples, both males, of this minute species were brought in from Aburoash near Cairo. Their measurements are as follows:—

No. "A." Head and body 50 mm.; tail 37; hind foot 9; ear 7.

No. "B." Head and body 55 mm.; tail 40; hind foot 10; ear 8.

The skulls of both are in very good condition and show them to be quite adult. The skulls are identical in size, and measure: Greatest length 16 mm., greatest breadth 7; breadth across maxillæ 5; interorbital breadth 4; breadth of snout 2; tip of incisors to tip of large premolars 3.5.

## CANIS ZERDA Zimm.

*Canis zerda* Zimm. Geogr. Gesch. ii. p. 247 (1780).

*Vulpes zerda* Zimm.; de Wint. in Anders. Zool. Egypt, Mamm. p. 233 (1902).

♂ near Muut, Oasis of Dakhel, 9th May, 1911.

This specimen was procured by Mr. Harding King, who has kindly presented it to the British Museum.

## MUNGOS ALBICAUDA Cuv.

*Herpestes albicauda* G. Cuv. Règne Anim. ed. 2, i. p. 158 (1829); de Wint. in Anders. Zool. Egypt, Mamm. p. 193 (1902).

Capt. Flower brought back a very young example of this species from Abu Usher on the Blue Nile, taken on the 1st November, 1910.

## GERBILLUS PYRAMIDUM Geoffr.

*Gerbillus pyramidum* Is. Geoffr. Dict. Class. H. N. vii. p. 321 (1825); F. Cuv. Trans. Zool. Soc. ii. p. 141, pl. xxv. figs. 6-9 (1838); de Wint. in Anders. Zool. Egypt, Mamm. p. 255 (1902); Bonh. P. Z. S. 1909, p. 791.

Three specimens of a large Gerbille said to have come from near Alexandria I have provisionally placed under this species. They are fully adult, but show a considerable range in size, the female being considerably smaller than the two males. From a comparison of these specimens with the series in the British Museum it seems probable that there are several forms of this species, but



the material at hand is not at present sufficient to admit of any definite conclusions being arrived at.

The measurements are as follows :—

♂. No. 358, J. L. B.: Hd. & b. 128 mm.; tail —; h.ft. 38; ear 17.

♂. No. 359 J. L. B.: Hd. & b. 126 mm.; tail 143; h.ft. 34; ear 17.

♀. No. 360, J. L. B.: Hd. & b. 116 mm.; tail 143; h.ft. 32; ear 17.

Skulls.	Greatest length.	Greatest breadth.	Least supra-orbital breadth.	Basal length.	Length of nasal.	Length of molar series.
♂. 358...	37 mm.	19	18	30	15	6
♂. 359...	38 „	20	8	30.5	15	6
♀. 360...	35 „	18.5	7	28	13.5	5

#### GERBILLUS GERBILLUS Oliv.

*Dipus gerbillus* Olivier, Bull. des Soc. Phil. Paris, ii. p. 121 (1801).

*Gerbillus gerbillus* Oliv.; de Wint in Anders. Zool. Egypt, Mamm. p. 252 (1902); Bonh. P. Z. S. 1909, p. 792.

The collection contains two more of this pretty and common Gerbille, one from the desert near Giza and the other from the Khargeh Oasis. In spite of its wide range this species is remarkably constant both in size and coloration.

#### MERIONES CRASSUS Sundev.

*Meriones crassus* Sundev. K. Vet.-Ak. Handl. p. 233, pl. ii. fig. 4, cranium (1843).

*Gerbillus sellysii* Pomel, C. R. Acad. Sci. xlii. p. 654 (1856).

*Meriones shawi* Rüpp.; de Wint. in Anders. Zool. Egypt, Mamm. p. 266 (1902) (partim).

I have lately received from Capt. Flower an example of *Meriones crassus* from Tor in Sinai. As this species was originally described from Sinai, this example represents the typical form of the species. It differs from that found in Lower Egypt in being slightly larger, with a more pointed snout and a much longer and stouter tail. The Egyptian specimens recorded by me in a former paper agree well with a series from Tripoli in the British Museum, which are practically topotypes of Pomel's species, and I have now no hesitation in referring them to this form. This I was unable to do before, owing to my having no typical *crassus* with which to compare them.

The form of *Meriones* found in the Sudan is much paler than that found in Lower Egypt, and I propose for it the name

#### MERIONES CRASSUS PALLIDUS.

Abstract P. Z. S. 1912, p. 3 (Feb. 13).

*Meriones crassus sellysii* Pomel, Bonh. P. Z. S. 1909, p. 793 (partim).

Very similar to *M. crassus sellysii*, but much paler, and the



snout is, in life, rather more pointed, though this character is not obvious in the skull. In size they are a trifle larger and with a rather shorter tail.

The skull differs from that of *M. c. sellysii* in having a rather longer and narrower appearance. This is chiefly due to the slightly greater length of the auditory bullæ, which also project further behind from the base of the skull, and the skull itself is slightly narrower at its posterior margin.

*Measurements of the type* (in the flesh).—Head and body 127 mm.; tail 110; hind foot 28; ear 17.

Skull of type—Greatest length 39 mm., basal length 34, greatest breadth 23; palatal length 17; diastema 10; length of bullæ 16.5; length of molar series 5.5.

*Type.* Coll. J. L. B. No. 313. ♂. Atbara, Sudan. Collected by Capt. S. S. Flower.

The genus *Meriones* is one which offers great difficulties to the systematic worker, as the different forms resemble each other very closely and have at various times been burdened with many names and but imperfect descriptions.

The forms dealt with at present are, however, fairly distinct; the larger size and long and stout tail easily distinguish the typical *crassus*. *M. c. sellysii* (Tripoli and L. Egypt) is smaller, with a less pointed snout, rather paler in colour, and with longer and more conspicuous black tips to the hairs of the back. *M. c. pallidus* (Sudan) resembles *M. c. sellysii*, except in its much paler coloration. In life, however, the Sudan form has a more pointed snout, approaching in this character true *crassus*. From a comparison of the measurements below it will be seen that it is also slightly larger.

	Head and body.	Tail.	Hind foot.	Ear.
<i>M. crassus</i> , 1 example ♀ ....	139 mm.	148	33.5	18
<i>M. c. sellysii</i> , av. 4 examples	126.5 „	120	29	17.5
<i>M. c. pallidus</i> , „ 4 „	131 „	112.5	31	18.2
<i>M. shawi melanurus</i> , 1 ex. ♀	139 „	135	32	17

In order to prevent any misunderstanding in the future, I may mention that these measurements and other particulars are all taken from wild specimens and do not in any way refer to a large series of these animals that I have bred in confinement.

#### MERIONES SHAWI MELANURUS Rüpp.

*Meriones shawi* Rozet, Voy. rég. d'Alger, p. 243 (sine descr.) (1833); Cuvier, Leçons d'Anat. Comp. iv. 2nd ed. 2nd part, p. 456 (1835); Duvernoy, Mém. Soc. Strasb. iii. p. 22, pls. 1 et 2 (1842).

*Meriones melanurus* Rüpp. Mus. Senck. iii. p. 95, pl. 7. fig. 3 (1845).

a. ♀ ad. Near Alexandria, Egypt.

This species, which is the one figured by Dr. Anderson, is easily



distinguished from the foregoing, as it is a larger and stouter animal, more closely approaching *Psammomys* in general build. In colour it is darker than *M. crassus*, the dark tips to the hairs being longer and much more conspicuous, especially on the tail.

The skull is more stoutly built and slightly longer, the extra length being almost entirely due to the longer molar series.

The teeth themselves, except in size, resemble those of *M. crassus*.

The most obvious skull-difference, however, is to be found in the auditory bullæ, which are much smaller and do not extend beyond the back of the skull.

The measurements of this specimen have been given under the preceding species to facilitate comparison.

The skull-measurements are as follows:—Greatest length 40 mm., basal length 35, greatest breadth 23; palatal length 19; diastema 11; length of bullæ 15; length of molar series 6.

#### PSAMMOMYS OBESUS Cretzschm.

*Psammomys obesus* Cretzschmar, Rüpp. Atlas, p. 58, pl. 22 (1828); de Wint., Anders. Zool. Egypt, Mamm. p. 274 (1902); Bonh. P. Z. S. 1909, p. 793.

Three specimens of the typical form from Maryût, L. Egypt.

#### MUS RATTUS TECTORUM Savi.

*Mus tectorum* Savi, Nov. Giorn. Pisa, Feb. 1825.

*Mus rattus* Linn.; de Wint., Anders. Zool. Egypt, Mamm. p. 274 (1902); Bonh. P. Z. S. 1909, p. 793; id. ibid. 1910, pp. 638, 651.

Mr. Nicoll shot an example of this form some distance up a tree. I have been trying to obtain evidence as to which of the two forms of *Mus rattus* climbs trees or whether both do it. This is the first *definite* evidence that *tectorum* is the climber, although there is a certain amount of indirect evidence on that point (see P. Z. S. 1910, p. 655). The question which requires settling is, does *M. r. alexandrinus* usually climb trees? On this point there is no evidence, direct or indirect. In confinement both forms climb with equal facility.

#### MUS MUSCULUS GENTILIS Brants.

*Mus gentilis* Brants, Muizen, p. 126 (1827).

*Mus musculus* Linn.; de Wint., Anders. Zool. Egypt, Mamm. p. 277 (1902); Bonh. P. Z. S. 1909, p. 794.

Two examples of this race of House-mouse, in which the hairs of the under parts are white to their bases, were brought back by Capt. Flower from Khartoum in the autumn of 1910.

#### MUS MUSCULUS, albino var.

Mr. Nicoll received from his correspondent Signor A. J. Balboni



in the Wadi Natron two examples of white mice, with the note that they were quite common in the Salt Company's buildings. These are apparently ordinary albino mice, similar to those which are domesticated throughout Europe. There is, however, no evidence to show whether these arose "spontaneously" or were imported by some previous occupant of the buildings and then escaped. I have asked Mr. Nicoll to try to procure further information on this point and also as to whether normal-coloured and piebald individuals are also found.

*ACOMYS RUSSATUS* Wagner.

*Acomys russatus* Wagner, Abh. Akad. München, iii. p. 195, pl. 3. fig. 2 (1840); Tristram, Fauna Palestine, p. 11, pl. 3. fig. 1 (1884).

I have received a pair of these rare mice alive from Sinai, the typical locality. This pair, which I received on May 3rd, gave birth on the 10th to three young. These were born, as in the case of *A. cahirinus*\*, in a very forward state of development, being very large and covered with hair and spines; they grew very rapidly and were about half grown and well able to fend for themselves when a fortnight old. They differ strikingly in coloration from the adults, being of a uniform pale grey throughout; when three weeks old the new adult coat of a lighter tint became visible on the under parts, and a week later the first trace of the yellow colour of the upper parts began to show on the shoulders; this coat gradually spread backwards towards the tail in a broad stripe along the centre of the back, the adult dress being finally completed along the flanks at the age of six weeks, by which time they were full-grown. I have been unable to note the exact period of gestation, but it is, I fancy, slightly longer than in the case of *A. cahirinus*.

This species is of a deep reddish brown on the back, each spine having a darker apex; the head is greyer and the under parts are greyish white, there being no sharp line of demarcation between the colours of the upper and under parts, as is the case in all other species of this genus, except *A. cahirinus*. The tail is short, being only about two-thirds the length of the head and body, and appears almost black, although it is sparsely covered with minute whitish hairs.

In my previous paper† I referred a specimen of an *Acomys* taken just outside Cairo to *A. cahirinus*. Since then I have received a second example obtained by Mr. Nicoll in the Wadi Hof near Helouan, and through the kindness of Capt. Flower I have also received, as noted above, a pair of *Acomys russatus* alive from Sinai.

This being the typical locality of *A. russatus*, the live ones are topotypes, and they differ in several particulars from those found

\* P. Z. S. 1911, p. 5.

† P. Z. S. 1909, p. 795.



in Egypt; the Egyptian form is therefore undescribed, and I propose for it the name

ACOMYS RUSSATUS ÆGYPTIACUS.

Abstract P. Z. S. 1912, p. 3 (Feb. 13).

Very similar to *Acomys russatus* Wagner, but smaller and much brighter and yellower in coloration. Character of the fur spiny throughout, except on the vent, shoulders, thighs, and side of the face. General colour above bright orange-brown, each spine with a minute tip of dark brown, which, however, is not sufficient to affect the general coloration. Hands, feet, and under parts greyish white, shading into the colour of the upper parts with no definite line of demarcation. Skin of ears and tail black, thickly covered in the case of the ears with greyish hair on both surfaces and in the case of the tail with short greyish spines. There is a small but conspicuous white spot below the eye.

The skull, which I described in my previous paper, has the snout rather shorter and broader than its allies and the bullæ considerably larger, while the teeth and length of the molar series are also of greater dimensions.

*Measurements of type* (in flesh).—Head and body 91 mm.; tail, damaged; hind foot 17; ear 16.

Skull—Greatest length 27 mm., basal length 22, greatest breadth 13; palatal length 12.5; diastema 7.5; length of molar series 5; length of nasals 10.

*Type.* Coll. J. L. B. No. 306. ♂ adult. Wadi Hof, near Helouan. Collected by Mr. M. J. Nicoll, 29th October, 1909.

As compared with the true *A. russatus* this form would appear to be rather smaller and much brighter in coloration.

Measurements of an adult ♀ (in the flesh) of the typical race are: Head and body 115 mm.; hind foot 19; ear 18; it is therefore considerably larger than the Egyptian form. Except in size the skulls of *A. r. ægyptiacus* and the typical form are very similar.

The skull-measurements of *A. russatus*, typical race, are as follows:—Greatest length 30 mm., basal length 25, greatest breadth 15; palatal length 13.5; diastema 8; length of molar series 5.5; length of nasals 11.5.

SPALAX ÆGYPTIACUS Nehring.

*Spalax typhus* Pall., Anders. P. Z. S. 1892, p. 472.

*Spalax ægyptiacus* Nehring, SB. Gesellsch. naturf. Fr. Berlin, 1897, p. 180; id. ibid. 1900, p. 210; de Wint. in Anders. Zool. Egypt, Mamm. p. 168 (1902).

Two examples of this scarce and little-known Rodent were received from Maryût in the Delta.

LEPUS SINAITICUS Hemp. et Ehr.

*Lepus sinaiticus* Hemp. et Ehr. Symb. Phys., Mamm. ii. pl. 14.



fig. 1 (1830); de Wint. in Anders. Zool. Egypt, Mamm. p. 322 (1902).

♂. Sinai, 23rd May, 1911.

This specimen, which was brought back from Sinai, through the courtesy of Capt. J. Falconer Bey, is in very rough and worn pelage. It has not yet been recorded from Egypt, and may be distinguished from *L. aegyptius* by its paler coloration and shorter hind foot.

PROCAVIA sp. ?

A fine example of a Hyrax, which was taken near Ras Gurdi, between Keneh and the Red Sea, was recently sent home. As the locality is very near the spot where the examples of *P. burtoni* mentioned in my previous paper came from, it is more than likely that this specimen also belongs to that species. It shows, however, the yellow spot round the dorsal gland which is absent in other examples of *P. burtoni*, although present in *P. ruficeps*; on the other hand, the head does not show the rufous tinge characteristic of the last-mentioned form. Unfortunately the skull, which would have settled the difficulty, was accidentally lost. I incline to the belief, however, that it is *P. burtoni*, and if so it must be borne in mind that when in worn pelage this species *may* show the yellow dorsal spot. The teeth, however, would form a definite distinguishing character.

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## EXHIBITIONS AND NOTICES.

February 6, 1912.

E. G. B. MEADE-WALDO, Esq., Vice-President,  
in the Chair.

THE SECRETARY read the following report on the additions made to the Society's Menagerie during the months of November and December, 1911, and January, 1912:—

### NOVEMBER.

The registered additions to the Society's Menagerie during the month of November were 247 in number. Of these, 119 were acquired by presentation, 28 by purchase, 17 were received on deposit, 77 in exchange, and 6 were born in the Gardens.





Bonhote, J. Lewis. 1912. "On a Further Collection of Mammals from Egypt and Sinai." *Proceedings of the Zoological Society of London* 1912, 224-231.

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