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t.-m.; second s.m. long, narrowed about half above. Legs slightly brownish, anterior knees with a yellow spot; spurs red. Abdomen broad, shining, segments 2 to 4 each with a broadly interrupted basal cream-coloured band, the lower margin of which on each side is convex; apical segments with a good deal of black hair; ventral segments with thin fringes of long hair. Maxillary palpi with six subequal joints, the basal ones the longest; labial palpi with one long joint and three short ones, which together do not exceed the long ones.

♂.—More slender; pale markings light lemon-yellow, as follows:—face below antennæ (including supraclypeal band and dog-ear marks), rapidly narrowing extensions of lateral marks about halfway up sides of front, interrupted band on prothorax above, anterior and middle knees, anterior tibiæ in front, greater part of anterior tarsi, a rather vague mark at base of middle tarsi, and basal bands on abdominal segments 2 to 6, at most slightly interrupted in middle. The apex of abdomen has a long tuft of fuscous hairs, curled upward, appearing pallid when seen from beneath. On the venter, subapically, is a broad strap-shaped lobe, broadest in middle, emarginate at end, and with plumose hairs arranged along the sides as a fringe, the apex also hairy. This lobe arises from the apical margin of the fifth segment.

Type from Santiago, Chile; two ♀s received years ago from Prof. E. S. G. Titus as *C. submetallicum*, Spinola, which is a larger insect with greenish abdomen, belonging to the genus *Liopœum*.

There are also before me 2 ♀ and 1 ♂ of *C. reedi* collected by E. C. Reed in Chile (U.S. Nat. Museum). I expected to find this identical with one of the species of Spinola, Friese, or Vachal; but it is evidently distinct from all. There is a superficial resemblance to the paler-haired form of *C. hirsutum*, Spin.

LV.—Notes on *Georychus* and its Allies.

By OLDFIELD THOMAS.

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IN 1898 * Mr. de Winton, in a note on *Georychus*, drew attention to the important characters which separate *G. capensis*

* Ann. & Mag. Nat. Hist. (7) ii. p. 8.

—the genotype—from the great mass of the species usually assigned to that genus, and proposed to recognize the two groups so distinguished as subgenera, accepting for the second subgenus the name *Cryptomys* from Dr. Gray's paper of 1864*.

This division appears to me thoroughly sound, especially as, in addition to the tooth-characters mentioned by de Winton, there is a material difference in the structure of the posterior palate, *Cryptomys* having this quite normal, while in *Georychus* (s. s.) the capsules of the incisor-roots are extended backwards into the pterygoids in a manner approaching that found in *Heliophobius*.

On the whole, therefore, it would appear to be advisable to recognize *Cryptomys* as a full genus distinct from *Georychus*, the great majority of the described species falling into it. On the other hand, Gray's *Cætomys* is not worthy of any sort of recognition.

Restricted *Georychus*—the *capensis* group—inhabits the extreme south of Africa, ranging northwards to Namaqualand on the west and the Transvaal in the east. *Cryptomys* only overlaps it along a comparatively narrow zone, but ranges northwards from Knysna and Natal over the whole of the Ethiopian region to Nigeria and Togoland.

As regards species, the genus *Cryptomys* is extraordinarily uniform both externally and cranially, the many forms described only differing, apart from size and a limited range in colour, by characters of but little importance, such as slight differences in the shape of the nasals, the relative lengths of premaxillary processes and the nasals, and the shape of the anteorbital foramina. Moreover, these differences, such as they are, are curiously inconstant in the group, almost any good series from one locality being liable to contain individuals with the characters supposed to be peculiar to other species. This is notably the case with the apparently important character of the anteorbital foramina, which in some cases may be high and lunate, with slender boundaries, or small and subcircular, with thick ones, in specimens taken in the same localities and obviously of the same species†. Young specimens tend to be of the former

* P. Z. S. 1864, p. 123.

† The type-skull of *G. nimrodi*, de Wint., has a subcircular foramen on one side and a high one on the other. And anyone to whom the British Museum collection is accessible should compare 4. 3. 1. 88 and 92, both from Vredefort Road (*Barrett-Hamilton*), which have the extremes of difference in the anteorbital foramina, and 5. 5. 1. 14 with 14. 5. 4. 20,

shape, and old ones of the latter, but individual exceptions to this rule are very numerous. No doubt the shape of the foramen is a good enough character, if care be taken that it is regarded as an average and not an invariable one, but species should certainly not be described on it alone without quite considerable series.

Of course, in species isolated geographically, such as *Cryptomys foxi* or *zechi*, the characters are more constant, but where, as in the southern half of Africa, the animals are found everywhere and no barrier to distribution exists, it may almost be said that any character of skull may be found in any species, thus absolutely nullifying geographical splitting of the usual type.

Even size, when the giant northern species are put aside, is of but little use, for in any series of skulls a few individuals will be found much larger than the great majority, these animals appearing to add to the bulk of their skulls long after they have attained adult life. For example, the type-skulls of both *C. bocagei*, de Wint., and *C. whytei*, Thos., are so much larger than others from the same areas that they might readily be thought specifically different from them.

Of course, I do not mean that the skull-characters are negligible, but only that a much more liberal view of their inconstancy and want of importance should be taken than is the case in other mammals. Let anyone look at Mr. Austin Roberts's figures of skulls, and he will see how essentially similar they all are to one another.

The mammary formula of *Cryptomys* appears to be always $2-1=6$. At least, this is the number I find in every spirit-female we have, whatever its locality. Mr. Roberts's statement that some of the species have no inguinal pair is probably due to his having attempted to count mammæ on fresh specimens, which is almost as difficult and untrustworthy as doing so on skins. Spirit-specimens are alone to be trusted for this particular purpose, as every mammalogist of any experience is aware.

It may be of interest to record that *Cryptomys*—or, at least, some of the species of it—possesses that most unusual structure, an *os clitoridis*. In a specimen of *C. mehowi* it is an oblong flattened bone 5 mm. in length, 1.5 in breadth, and 0.5 in thickness, not very much smaller than the corresponding

both from the same farm at Willbrook, Estcourt (*Wroughton & Turner*), which equally have the extremes as regards the posterior nasal regions, other specimens from the same series filling up the gap between them.

bone of the male. The latter, however, is of more normal shape, round in section, thick at base, tapering terminally.

One of the causes of the wide distribution of similar forms is no doubt the habit of these animals of frequenting in the dry-season the empty beds of the rivers, and then when the water comes down in flood such as survive are carried along to make further colonies lower down, by which process the *Cryptomys* of rivers hundreds of miles in length are preserved from local isolation.

These facts about this difficult group have been gradually impressing themselves on mammalogists for some time, and it was hoped that by the increase of collections and literature a proper understanding of the true state of things would be reached. But unfortunately for South-African mammalogy a worker in the Transvaal Museum has recently written a number of papers * in which he has given names to nearly a score of "species" of *Cryptomys* without reference to any of the older collections or any adequate quotation of the literature of the subject. He appears not to have learnt the underlying basis of scientific mammalogy, which is the non-occurrence of closely allied species on the same ground, for we find such surprises as the description of four species of small *Cryptomys* from Pretoria alone and many others from its near neighbourhood. His species are ostensibly based on the characters of the skull—now known, as above explained, to be of little importance,—but these are so described and with such insufficient comparison one with another that it is quite impossible to identify them. Even an albino is described as a new species, *Georchus albus*!

The character of the work is of the same quality in other groups of mammals.

These papers are published in the official journal of the Transvaal Museum, and I would respectfully urge on the authorities of that institution to consider what a fatal effect the issue of such work is likely to have on the reputation of their Museum and its standing in scientific estimation. I feel perfectly certain that they will not wish their finely got up journal to be the vehicle for what is little short of a catastrophe to one of the sciences they deal with.

Mr. Roberts's obvious enthusiasm for mammalogy might have been made of the greatest service to science had he consulted any of the older workers, and had he learnt from them a little caution before rushing into print on so difficult a subject.

* Austin Roberts, "The Collection of Mammals in the Transvaal Museum," Annals of the Transvaal Museum, 1913, and Supplements, 1914-1917.