J.G. Keulemans del.

Mintern Bros. imp.

1. 2. CERCHNEIS RUPICOLA.
3. ..... „ ..... TINNUNCULUS, ♀.

all my then measurements of the red corpuscles in this order those of *Phoca* proved the largest; and now this size is exceeded in *Otaria* and *Trichechus*. The smallest red blood-corpuscles in the Carnivora occur in some species of *Viverra*, *Paradoxurus*, and *Herpestes*. But between several sections of this order there are curious irregularities in the differences of the size of these corpuscles, which, as our knowledge extends, will probably prove of physiological significance: meanwhile I have already shown that they have taxonomic value; for example, by the comparative magnitude of the red blood-corpuscles alone the Canidæ may be easily distinguished from Viverridæ.

Trichechus rosmarus.—This animal (the Morse or Walrus of popular books) has the red blood-corpuscles still larger than those of the Eared Seal. Some years ago a young Walrus arrived in a sickly state, and died soon afterwards, at the Society's menagerie, when I examined its blood and found it very rich in red blood-corpuscles, and consequently of high specific gravity. Referring to my notes, it appears that the mean of numerous measurements of the diameter of the corpuscles was $\frac{1}{2769}$ of an inch, being exactly the same as the average diameter of the corresponding corpuscles of the two great Edentates already mentioned. And this conclusion is confirmed by recent measurements of the old specimens of the blood-corpuscles of *Trichechus*; they were so long since dried, and yet are still beautifully perfect. Thus of all apyrenæmatous red corpuscles, those of *Elephas*, *Myrmecophaga*, *Orycteropus*, and *Trichechus* are the largest at present known.

The red blood-corpuscles of man are among the largest of the Mammalia. No British animal of this class has them so large; in all my former observations red corpuscles distinctly larger than of man were found only in six Mammalia, to wit, *Myrmecophaga jubata*, *Orycteropus capensis*, *Bradypus didactylus*, *Elephas indicus*, *E. africanus*, and *Balæna boops*. To these must now be added *Trichechus rosmarus* and *Otaria jubata*.

Structure and Form.—The red blood-corpuscles of the Hippopotamus, *Otaria*, and *Trichechus* conform in structure and shape to the regular apyrenæmatous type. Nor among the Mammalia has any indubitable exception to the apyrenæmatous character of these corpuscles yet been found.

4. Contributions to a History of the Accipitres or Birds of Prey. By R. Bowdler Sharpe, F.L.S., F.Z.S., &c., of the Zoological Department, British Museum.—I. On the Females of the Common and South-African Kestrels.

[Received August 5, 1874.]

(Plate LXVIII.)

A short time ago I received from my friend Mr. Bygrave Wharton a pair of Common Kestrels which he had recently obtained in Hert-

fordshire along with the nest and eggs; and the female of this bird wears such a curious plumage that I have thought it worthy of being brought before the notice of the Society. She is fully adult, having been, indeed, trapped on the nest, but has almost the tail of a male bird, blue with a few black bars. My views on the relation of the British avifauna to that of the continent of Europe are, I believe, now so well known that I shall be excused for bringing forward this female Kestrel as a further evidence of the tendency of our indigenous birds to show the effects of their insular habitat, of which *Parus britannicus* and *Acredula vagans* are forcible examples. For I may as well state that my faith in these last-named species is not in the least shaken, despite the cheers for a "*conservative* reaction" given by Dr. Sclater ('Ibis,' 1874, p. 173) on account of Professor Newton's refusal to recognize, in his edition of 'Yarrell,' the specific titles bestowed on the British Titmice. I am thankful to say that all the continental naturalists to whom I have shown the birds are more "*liberal*" in their tenets—and naturally so; for neither Professor Newton nor any one else has yet recorded an olive-backed Coal Titmouse from the continent of Europe; and however nearly *Parus britannicus* in its *worn breeding-plumage* may approach the blue-backed *P. ater*, birds killed in autumn, winter, and spring can scarcely be mistaken for that species.

Returning once more to *Cerchneis*, I notice that the discovery of a female of *C. tinnunculus* with a blue tail renders invalid the characters which I have assigned to the hen *C. rupicola* in my 'Catalogue of Birds;' and it therefore becomes necessary to reexamine the two species, to establish, if possible, a permanent character between them. In Dresser's 'Birds of Europe,' when I was part author, the Common Kestrel was described and figured; and we then had occasion to remark on the dark form of Kestrel which occurs along the southern range of *C. tinnunculus*, from Madeira through Senegambia to Abyssinia, in the Himalayas, China, and Japan. At p. 426 of the 'Catalogue' I again draw attention to this dark form: and I may be allowed to quote a few remarks I make there on the plumage of the female:—"Through all these dark races of Kestrel one character is predominant in addition to the richer and more intense coloration of the male bird, viz. that the female has more or less of a shade of blue on the rump and tail, which sometimes overspreads the whole of the latter." The Hertfordshire female, however, differs from those alluded to in the above paragraph in having an entirely blue tail regularly banded across with black, and the rump also blue with a few black shaft-streaks. And if any one takes this specimen for elucidation by means of the "Key to the Species" of *Cerchneis* (p. 423), they will find that it will appear as an adult female of *Cerchneis rupicola*, the South-African Kestrel, and is further closely allied to that of *C. moluccensis*. That a hen bird killed in England along with an ordinary male Kestrel can be either one or the other of these species is impossible; but we may look upon it as exhibiting a tendency to vary in our indigenous species in the same way as the Madeira bird does in a more southern latitude.

In its dark coloration it approaches closely to a specimen of *C. japonica*; but this bird has not such a thoroughly blue tail.

I add a few measurements of Kestrels, as those given in my 'Catalogue' do not give an exact idea of the proportions of *C. tinnunculus* and *C. rupicola*, the former appearing rather too small.

α. C. tinnunculus.

	Total length.	Wing.	Tail.	Tarsus.
1. ♂ ad. Thuringia	12·5	9·6	6·7	1·4
2. ♀ ad. Aboyne, N.B. ..	14·0	10·2	7·0	1·5
3. ♂ ad. Belgium	14·0	10·0	7·5	1·5
4. ♂ ad. Nepal	14·0	10·3	7·3	1·6
5. ♂ ad. Behar	15·0	10·4	7·3	1·6
6. ♂ juv. Bagdad	13·0	9·4	6·6	1·55

β. C. tinnunculus (dark race).

1. ♀ ad. Aldenham, Herts.	14·0	9·8	7·0	1·55
2. ♀ imm. Fokien, China.	14·5	10·2	6·7	1·6

γ. C. rupicola.

a. ♀ ad. Cape of Good Hope.	12·7	9·7	6·0	1·45
b. ♀ ad. Angola.....	14·0	9·6	6·6	1·45
c. ♂ ad. „	12·0	9·2	6·2	1·45
d. ♂ ad. „	12·0	8·8	5·9	1·4
e. ♂ ad. Cape of Good Hope.	12·5	10·1	6·2	1·55

Kestrels, like other raptorial birds, are never very easy to measure; and it is seldom that two people measure the same bird with exactly the same results. The dimensions of these birds, therefore, can only be taken in a very broad and general sense; but supposing that in the above list we have an average series of specimens, the following result is obtained :—

	Male.	Female.
C. tinnunculus....	Wing 9·4–10·4.	Wing 9·8–10·2.
	Tarsus 1·4–1·6.	Tarsus 1·5–1·6.
C. rupicola	Wing 8·8–10·1.	Wing 9·6–9·7.
	Tarsus 1·4–1·55.	Tarsus 1·45.

In the 'Catalogue' (p. 428) a series of *C. tinnunculus* measured as follows:—(♂) wing 9·3–10·2, tarsus 1·45–1·6; (♀) wing 9·5, tarsus 1·6; so that the full results of my measurements of this species show that the wing of the male varies from 9·3 to 10·4 inches, and its tarsus from 1·4 to 1·6 inch; while in the female the wing varies from 9·5 to 10·2 inches, and the tarsus from 1·5 to 1·6 inch. I discard the dimensions of *C. rupicola* given by me in the above-mentioned volume, as some error has certainly crept in there. The *general average*, therefore, of *C. tinnunculus* is larger than that of *C. rupicola*, although both species vary immensely. On looking over a series of both placed side by side, almost the only differences are the darker and more *chestnut* tone of the rufous in *C. rupicola* as compared with the paler and more *vinous* tint of *C. tinnunculus*,

the darker and more *slaty blue* of the head and tail in *C. rupicola* compared with the paler and more *greyish blue* of those parts in *C. tinnunculus*. Below, the differences are very striking, the breast in *C. rupicola* being of a deep chestnut-fawn-colour with black spots, while in *C. tinnunculus* the under surface is fulvous fawn-colour with a slight vinous tinge. But the best character which separates the two species exists in the sides of the face of *C. rupicola* being entirely blue like the crown, with no fulvescent ear-coverts. The females of both species differ from the males in having rufous instead of blue heads; and whereas the hen of *C. rupicola* always has a blue tail banded with black, the ordinary plumage of the female *C. tinnunculus* is a rufous tail banded with black, excepting when a bluish shade is apparent on the tail of the dark form which inhabits the localities mentioned by me above. The specimen obtained by Mr. Wharton endangers the validity of the blue tail as a good character; but, for all this, the bird is a regular Common Kestrel with the pale under surface, and with greyish cheeks and ear-coverts, the sides of the neck being also light fulvous with blackish streaks; whereas in the female *C. rupicola* these parts are all deep rufous, with a very slight greyish shade on the upper ear-coverts.

While on the subject of Kestrels, I would draw attention to the fact that the Moluccan species includes two forms, as has been already pointed out by Professor Schlegel in his 'Valkvogels van Nederlandsch Indie' (p. 48). He says there, "the Kestrel of the Moluccas has been observed by our travellers in Java, Borneo, Celebes, in the Halmahéra group, Ceram, Amboina, Timor, and Flores. With the exception of Java, we possess specimens to the number of twenty-five collected in the localities above cited. On comparing them *inter se*, one sees that in all those killed in the Halmahéra group the brownish-red tinge is darker and extends over all the sides of the head, whilst the throat, as well as the forehead, borders more plainly on rufous. These individuals have been killed in different parts of Halmahéra and in the islands of Morotai, Ternate, Marèh, Tidore, and Batchian. We only possess three examples from the Ceram group; of which two, killed in Ceram and Amboina, are indistinguishable from those of the Halmahéra group, whilst the third one, by means of its clear tints, approaches more those from the other parts of the archipelago. Those from Borneo and Celebes have the colours less pronounced, and that of the region of the ear passes more or less perceptibly to whitish. It is the same in our example from Timor and in that from Flores; the latter is remarkable for the restricted number and minuteness of the dark spots on the back and wings." An excellent plate with three figures (pl. 1. figs. 3–5) illustrates Prof. Schlegel's remarks; and when I was in Leiden last year I saw the original specimens. Fig. 3 represents a Batchian specimen, fig. 4 the Flores bird referred to above, and fig. 5 the light-cheeked Ceram bird.

When examining the Leiden series of *C. moluccensis* I found that there was certainly a recognizable difference, as Professor Schlegel has pointed out, in birds from various localities; but I could not sepa-

rate them specifically, as some of the neighbouring islands produced more or less intermediate forms. Birds from the following localities had a conspicuous silvery-white shade on the ear-coverts—Flores, Celebes, Borneo, Timor, Amboina, and Ceram; while specimens from the following islands had dark ear-coverts and forehead—Gilolo, Batchian, Morty, Maréh, Ternate, Tidore, and Ceram. The darkest were those from Batchian, Morty, and Maréh, while those from Ternate, Tidore, and Ceram had an appearance of silvery-white ear-coverts. The Amboina bird is noted by me as a bleached and faded specimen in worn plumage; while the one from Flores, figured by Professor Schlegel, I considered at the time to be an extremely old bird.

The accompanying drawing (Plate LXVIII.) represents an adult pair of *C. rupicola* (figs. 1 & 2), a species which has never been well figured; and the Aldenham female of *C. tinnunculus* is also drawn (fig. 3).

5. Descriptions of some new Species of Shells from various Localities; also of a new Genus of Bivalves from Mauritius. By Henry Adams, F.L.S.

[Received August 6, 1874.]

(Plate LXIX.)

Mr. Holdsworth having kindly placed in my hands for examination the shells recently obtained by him from the pearl-oyster beds at Ceylon, I find among them two species that appear to be new, as well as several known species which, from having been collected alive, still retain their opercula. Of one of the latter, viz. *Tudicla spirilla*, Lam., the operculum has not been hitherto observed, and is therefore now figured (Plate LXIX. fig. 2). The genus *Tudicla* was included by my brother and myself, in our 'Genera of Recent Mollusca,' in the family Fasciolariidæ; and Dr. Gray subsequently, in his 'Guide to the Mollusca,' placed it as a subgenus of *Murex* in the Muricidæ. The operculum of *Tudicla*, however, possesses similar characters to those of the other genera of Fasciolariidæ, being acutely ovate and having the nucleus apical; and I would consequently retain it in that family. The shell, moreover, is furnished with a plait upon the columella, is without varices, and has a papillary apex; while the shells of *Murex* have no plait, are all more or less variced, and have the apex acute.

I take this opportunity of figuring also (Plate LXIX. figs. 4, 4*a*, 4*b*) the operculum (hitherto unknown) of *Neritopsis*, from which it would appear that it is more closely allied to the Neritidæ than to the Naticidæ. The specimen containing this operculum was procured from Barkly Island, Mauritius. Among other shells received from Mauritius is an example of *Scintilla incerta*, Desh., described in his 'Cat. des Moll. de l'île de la Réunion' from a specimen obtained at that place; and he remarks that although he refers it to the genus *Scintilla*, he considers it to form an intermediate link between that genus and the genus *Galeomma*, possessing, as it does,