June 14, 1842.

Richard Owen, Esq., Vice-President, in the Chair.

The following paper, by George Gulliver, Esq., F.R.S., entitled "Observations on the Muscular Fibres of the Œsophagus and Heart in some of the Vertebrate Animals," was read.

The present communication is a continuation of the observations on the muscular fibres of the Œsophagus and heart published in the Proceedings of the Zoological Society, September 10, 1839, p. 124.

21. Pipistrelle (*Vespertilio Pipistrellus*, Gmel.).—The streaked muscular fibre was found on the whole length of the gullet, excepting the 1-16th of an inch of its cardiac end.

22. Hedgehog (*Erinaceus Europæus*, Linn.).—In this animal the striated or voluntary muscular fascicles form the sheath of the gullet to its termination in the stomach.

23. Mole (*Talpa Europæa*, Linn.).—Muscular sheath of the gullet the same as in the hedgehog.

24. Shrew (*Sorex tetragonurus*, Herm.).—The muscular sheath of the gullet the same as in the two preceding species.

25. Black Bear (*Ursus Americanus*, Pall.).—The muscular fibre of animal life formed a very thick and red sheath to the entire length of the gullet, and even extended in bands for an inch on the cardiac end of the stomach.

26. Wolf (*Canis Lupus*, Linn.).—The muscular fibre of animal life invested the whole length of the gullet, and extended scantily, for about two-thirds of an inch, on the cardiac end of the stomach.

27. African Civet Cat (*Viverra Civetta*, Linn.).—Two inches from the stomach the sheath of the gullet was composed chiefly of the muscular fibre of organic life mixed with a few of the muscular fibres of animal life; and within an inch and three-quarters from the stomach none of the latter fibres could be found on the gullet. Mr. Siddall examined the gullet of another civet cat with the same result.

28. Lion (*Felis Leo*, Linn.).—The muscular fibre of animal life could not be traced on the gullet further than four inches and a half from its ending in the stomach. Nearer to the cardiac orifice, especially about two inches therefrom, the Œsophageal sheath was made up of bands containing corpuscles as in the horse*. Seven inches from the stomach the sheath of the gullet was composed of the muscular fibres of animal and organic life in nearly equal proportions.

29. Puma (*Felis concolor*, Linn.).—The muscular fibre of animal life, mixed with a greater proportion of the muscular fibre of organic

* See Proc. Zool. Soc. 1839, pp. 127 and 129; in which, p. 127, line 17, for *gullet* read *filaments*.

life, composed the œsophageal sheath about three inches from the stomach, where the gullet had been divided, and no opportunity was afforded of examining its last portion.

30. Chetah (*Felis jubata*, Linn.).—The muscular fibre of animal life was abundant on the gullet ten inches from the stomach, and extended more scantily three inches nearer to it. On the last six inches of the cardiac end of the gullet no muscular fibre of animal life could be found.

31. Weasel (*Mustela vulgaris*, Linn.). 32. Stoat (*M. erminea*, Linn.). 33. Polecat (*M. Putorius*, Linn.).—In these animals the muscular fibre of animal life was traced on the gullet to its termination in the stomach.

34. Seal (*Phoca vitulina*, Linn.).—The muscular fibre of animal life extended along the whole gullet, excepting about an inch of its cardiac end.

35. Porpoise (*Delphinus Phocæna*, Briss.).—In a young one weighing ten pounds, and said to have been extruded from the mother after her capture, June 13, 1842, the muscular fibre of animal life could be traced on the gullet no further than four inches from its stomachic end.

36. Paco (*Auchenia Paco*, Desm.).—The muscular fibre of animal life was detected on the gullet to its termination; an inch and a quarter from the stomach the muscular fibre of organic life was abundant on the gullet; and the muscular fibre of animal life only was found in the œsophageal sheath two inches from the stomach. The tissue under the mucous membrane around the water-cells resembled that of the middle coat of the stomach elsewhere, being quite destitute of anything like the muscular fibre of animal life.

37. Dromedary (*Camelus Dromedarius*, Linn.).—Muscular sheath of the gullet the same as in the Paco.

38. Wapiti Deer (*Cervus Wapiti*, Mitchell).—The muscular fibre of animal life invested the gullet to its termination.

39. Cervine (*Antilope Bubalis*, Pallas).—The œsophageal sheath was formed throughout of the muscular fibre of animal life, which extended for an inch on the stomach.

40. Palm Squirrel (*Sciurus Palmarum*, Briss.). 41. Common Squirrel (*S. vulgaris*, Linn.). 42. Golden Agouti (*Dasyprocta aurata*, F. Cuv.). 43. Water Rat (*Arvicola amphibia*, Desm.).—In these animals the muscular fibre of animal life completely invested the gullet, being abundant on its cardiac extremity.

44. Kangaroo (*Macropus Bennettii*, Waterhouse).—The muscular fibre of animal life was plentiful on the upper part of the gullet, and terminated between three and four inches from the stomach.

45. Squirrel Flying Opossum (*Petaurus sciureus*, Geoff.).—An inch and a quarter of the stomachic end of the gullet was without the muscular fibre of animal life, which was pretty abundant an inch further from the stomach.

I have ventured to apply the term voluntary to the striated muscular fascicles—extending along the entire length of the gullet, and even on the commencement of the cardiac extremity of the sto-

mach in several animals, along more or less only of the tube in man and some other mammals, and wholly absent from it in many of the lower Vertebrata—because this fibre has all the anatomical characters of the muscular fibre of animal life, which no completely involuntary muscle has hitherto been found to possess*. If we are to judge of the office of the fibre in question from its structure, it must be concluded that in many Vertebrata the whole length of the gullet is capable of voluntary motion, in some the lower or posterior portion is not obedient to the will, while in others the motions of the entire gullet must be quite involuntary.

That the muscular coat of the gullet should differ in animals of different orders will not appear surprising; but it was hardly to be supposed that a difference in the œsophageal sheath would be found in some genera of the same order. Yet such is the fact in the *Feræ*; and it is probable that further research into the anatomy of this order will disclose more differences in their minute structure, especially as my observations on the blood have shown that there is a remarkable diversity in the size of the blood-corpuscles or red particles of some of the subdivisions of the *Carnivora*†.

Perhaps the extent of the muscular coat of the gullet may vary in the same subject at different periods of life. In young and middle-aged mares and geldings some of the muscular fibre of animal life may be generally traced on the gullet four or five inches from the stomach; but in a gelding twenty-five years old this fibre could not be found on the last ten inches of the gullet; and in an aged rabbit I found the striated muscular fascicles but sparingly on the last inch of the gullet, although in this animal generally they are most abundant in this situation.

A summary of my inquiry concerning the extent of the voluntary muscular fibre on the gullet is subjoined. Some of the results may be modified by more facts, which are yet required to furnish a satisfactory view of the subject. I have had no opportunity of becoming acquainted with the researches of M. Ficinus and M. Valentin, referred to by Dr. Baly in his translation of Professor Müller's 'Physiology,' vol. ii. p. 851.

QUADRUMANA.

In this order, as in the human subject, the muscular fibre of animal life does not invest the lowest portion of the gullet.

CHEIROPTERA.

In the pipistrelle, the sheath of the gullet, excepting 1-16th of an inch at the stomachic end, was formed of the muscular fibre of animal life.

FERÆ.

Insectivora.—In the three British genera the muscular fibre of animal life covers the whole length of the gullet.

* See Proc. Zool. Soc. 1839, p. 128.

† Ibid. Nov. 24, 1840, and May 25 and June 8, 1841; and Appendix to Gerber's General Anatomy, pp. 6, 7.

Canidæ.—The muscular fibre of animal life extends to the stomachic end of the gullet. In the silvery fox none of this fibre could indeed be detected on the terminal third of an inch of the gullet, which should be examined again in another individual.

Viverridæ.—In the African civet cat the striated muscular fascicles do not cover the last portion of the gullet.

Felidæ.—The stomachic end of the gullet is not clothed with the muscular fibre of animal life; but in the caracal a few irregular fibres were observed on the cardiac end of the gullet, perhaps belonging to the muscular fibre of animal life, although they were quite destitute either of transverse or longitudinal streaks.

Mustelidæ.—In the otter the muscular fibre of animal life covers the gullet, excepting about half an inch of its stomachic extremity; in three species of *Mustela* this fibre invests the whole gullet.

Phocidæ.—In the seal no muscular fibre of animal life was found on the gullet within an inch of the stomach.

Ursidæ.—In the genus *Nasua*, and in the sloth-bear and American bear, the gullet is throughout clothed with the muscular fibre of animal life, which in the latter animals is very thick and red on the last portion of the gullet, and extends on the cardiac extremity of the stomach.

CETACEA.

In a porpoise no muscular fibre of animal life could be found on four inches of the stomachic end of the gullet, although this fibre was abundant on the rest of the thoracic portion of the gullet.

RUMINANTIA.

The voluntary muscular fibre runs along the entire length of the gullet, and sometimes to a short distance on the cardiac extremity of the stomach. The striated muscular fibre on the last portion of the gullet is often mixed with a much greater proportion of the muscular fibre of organic life.

RODENTIA.

The whole length of the gullet is clothed with the muscular fibre of animal life.

MARSUPIALIA.

In the kangaroo and the squirrel-flying opossum no muscular fibre of animal life was found on the stomachic end of the gullet.

BIRDS, REPTILES, AND FISHES.

I have carefully searched for the striated muscular fascicles in the gullet of the birds and reptiles mentioned in the table, but in vain. In Birds the fibre of the superficial coat of the gullet is often disposed transversely, in which respect it may be seen with the naked eye to differ from the œsophageal muscular sheath of mammals. In a few fishes the striated muscular fascicles invested the entire length of the gullet, and extended some distance on the stomach in others, as in the pike and bull-head. In the barbel some of

these fascicles were found on the gullet or termination of the pharynx opposite to the posterior border of the gill-cover. In Fishes the striated muscular fasciculi of the gullet appear, from the measurements now given, to be much smaller than the fasciculi of the muscles of the body; and a like difference, though to a much smaller degree, often exists in mammals.

In the heart of the smaller species of the lower Vertebrata distinct muscular fibres are often not to be found, the structure being less distinct than in the heart of many mammals; generally composed of bands or fillets not easily separable from each other, and commonly about $\frac{1}{3000}$ th of an inch broad. These fillets are seldom clearly streaked transversely; they are irregularly and most minutely granulated, without the longitudinal arrangement of the granules so plainly visible in the beaded primitive fibrils of the heart of Mammalia. In short, the known points of resemblance between the muscular fibre of the heart of mammals and that of voluntary muscle are generally wanting in the structure of the heart of the smaller species of the lower Vertebrata, for the latter is more nearly allied to the muscular tissue of organic life as it exists in other parts.

In some of the voluntary muscles of many of the smaller Mammalia and Birds, as the common mouse and *Fringillidæ*, the existence of a sheath around the fibres appears to be questionable; and in the heart of such animals the fibres are remarkably indistinct. In the common water-vole I noticed a very clear appearance of primitive fibrils, yet these seemed to be nowhere collected into fascicles. In the great pectoral muscle of various small birds, as the common swift, the transverse streaks are very indistinct, and often difficult to be seen, although they are very plain in the muscle of the leg; yet in this bird the former muscle is highly developed, and almost constantly in action, while the latter are but small and little used. It will be recollected that the above remarks apply only to particular muscles, and are not to be considered as at all invalidating the admirable demonstration of the sarcolemma in many muscles by Prof. Schwann and Mr. Bowman, and the parallel observations of Dr. Jones Quain and Mr. W. J. E. Wilson*. As before observed, the fibres of the heart of Mammalia seem to have no intervening cellular (filamentous) tissue; this tissue, however, is easily observed in the heart of many lower vertebrate animals; and I have very recently seen minute wavy filaments, having all the characters of cellular tissue, in the heart of the bear, and of some other mammals which had died in confinement.

It will be seen that the term fibre, as used in this paper, corresponds to the primitive fasciculus of Fontana, Müller, and Bowman†. As in the heart there is often a tolerably clear appearance of fascicles, and as frequently only of the fillet-like bands, both have been set down in the following table as fibres; and the larger size of the fascicles will at once distinguish them from the bands, the primitive

* See Phil. Trans. part ii. 1840, p. 475.

† Loc. cit. p. 458.

fibrils of the muscular tissue being out of the question. In the snake and newt the bands composed the tissue of the auricles, while a collection of these bands into fascicles appeared and was measured in the ventricles; the measurements will show many parallel instances, and one in which the fascicles appeared in the auricle and the bands in the ventricle. The numbers in the table represent the diameters of the fibres in vulgar fractions of an English inch, and where one only occurs it expresses the average size. The terms auricle and ventricle, under the column headed "Muscle," refer to the heart. The animals, unless noted to the contrary, were adults that had been dead some time before they were examined. In making many of the measurements I have been indebted to the kind assistance of Mr. Siddall.

Table of Measurements of the Fibres of the Heart and of some Muscles of Voluntary Motion in Vertebrate Animals.

Animal.	Muscle.	Diameter.	
		In the Heart.	In Voluntary Muscle.
<i>Cercopithecus sabæus</i> , <i>Desm.</i>	Ventricles	1-1333 to 1-1000	1-1000 to 1-666
	Gullet		
<i>C. griseo-iridis</i> , <i>Desm.</i>	Ventricles	Ditto	Ditto
	Gullet		
<i>C. Æthiops</i> , <i>Geoff.</i>	Ventricles	Ditto	Ditto
	Gullet		
<i>Macacus Rhesus</i> , <i>Desm.</i>	Ventricles	1-1000	1-800 to 1-555
	Gullet		
<i>M. Inuus</i> , <i>Desm.</i>	Gullet		1-666 to 1-500
<i>Cebus capucinus</i> , <i>Geoff.</i>	Gullet		1-800 to 1-500
<i>Lemur albifrons</i> , <i>Geoff.</i>	Diaphragm		1-666 to 1-300
<i>Plecotus auritus</i> , <i>Geoff.</i>	Right ventricle	1-1600 to 1-800	1-888 to 1-571 1-1143 to 1-666
	Pectoral		
	Of the ear		
<i>Vespertilio noctula</i> , <i>Schreb.</i>	Ventricles	1-2000 to 1-1000	1-1333
<i>Vespertilio Pipistrellus</i> , <i>Gmel.</i>	Ventricle	1-2000 to 1-1067	
	Gullet		
<i>Erinaceus Europæus</i> , <i>Linn.</i>	Ventricles	1-2666 to 1-1000	1-1000 to 1-571 1-1000 to 1-500
	Cutaneous		
	Gullet		
<i>Sorex tetragonurus</i> , <i>Herm.</i>	Ventricles	1-2666 to 1-1333	1-555 1-1145
	Pectoral		
	Gullet		
<i>Talpa Europæa</i> , <i>Linn.</i>	Ventricles	1-3000 to 1-1133	1-1333 to 1-660
	Gullet		
<i>Nasua fusca</i> , <i>Desm.</i>	Gullet		1-888 to 1-333
<i>Ursus labiatus</i> , <i>Blainv.</i>	Left ventricle	1-2000 to 1-1000	1-800 to 1-373
<i>Ursus Americanus</i> , <i>Pall.</i>	Ventricles	1-1500 to 1-666	
	Left auricle	1-2000 to 1-800	
	Gullet		
<i>Canis familiaris</i> , <i>Linn.</i>	Auricles and ventricles	1-2400 to 1-800	
	Gullet		1-800 to 1-400
	Diaphragm		1-800 to 1-285

Table (continued).

Animal.	Muscle.	Diameter.	
		In the Heart.	In Voluntary Muscle.
Canis familiaris, <i>Linn.</i> (12 days old)	Ventricles	1-2656 to 1-2000	
	Gullet		1-2000 to 1-1333
Ditto (18 weeks old)	Gullet		1-1333 to 1-800
Canis vulpes, <i>Linn.</i>	Left ventricle ...	1-1600 to 1-1333	
	Gullet		1-800 to 1-500
<i>C. lagopus</i> , <i>Linn.</i>	Gullet		1-1000 to 1-533
<i>C. argentatus</i> , <i>Desm.</i>	Ventricles	1-1333 to 1-1000	
	Gullet		1-1000 to 1-600
<i>C. Lupus</i> , <i>Linn.</i>	Left ventricle ...	1-1600 to 1-800	
	Left auricle	1-1600 to 1-1000	
	Gullet		1-1400 to 1-285
<i>Viverra Civetta</i> , <i>Linn.</i>	Left ventricle ...	1-2000 to 1-1777	
	Gullet		1-570
<i>Felis Leo</i> , <i>Linn.</i> (two-thirds grown)	Ventricles	1-2000 to 1-1777	
	Gullet		1-571
<i>F. concolor</i> , <i>Linn.</i>	Left ventricle ...	1-2000 to 1-1333	
	Left auricle	1-4000 to 1-2000	
	Gullet		1-500 to 1-400
<i>F. Leopardus</i> , <i>Linn.</i>	Left ventricle ...	1-2666 to 1-700	
	Gullet		1-500 to 1-333
<i>F. jubata</i> , <i>Linn.</i>	Left ventricle ...	1-1600 to 1-1050	
	Gullet		1-888 to 1-400
<i>F. cervaria</i> , <i>Temm.</i>	Ventricles ...	1-2000 to 1-1333	
	Gullet		1-1000 to 1-373
<i>F. Caracal</i> , <i>Gmel.</i>	Left ventricle ...	1-1600 to 1-1000	
	Gullet		1-1000 to 1-666
<i>F. domestica</i> , <i>Briss.</i> (16 days old)	Ventricles	1-3200	
	Gullet		1-1600 to 1-660
<i>Mustela vulgaris</i> , <i>Linn.</i>	Left ventricle ...	1-2000 to 1-1000	
	Left auricle	1-2666 to 1-1333	
	Gullet		1-1333 to 1-800
<i>M. erminea</i> , <i>Linn.</i>	Right ventricle ...	1-1777 to 1-1000	
	Right auricle ...	1-2000 to 1-1145	
	Gullet		1-1000 to 1-571
<i>Lutra vulgaris</i> , <i>Erxl.</i>	Ventricles	1-2000 to 1-1143	
	Gullet		1-800 to 1-500
<i>Phoca vitulina</i> , <i>Linn.</i>	Ventricles and auricles	1-3000 to 1-1600	
	Gullet		1-2000 to 1-1000
<i>Delphinus Phocæna</i> , <i>Linn.</i> (just born)	Ventricle	1-4000	
	Scapular		1-888
	Gullet		1-2000
<i>Equus Caballus</i> , <i>Linn.</i>	Ventricles	1-2000 to 1-666	
	Diaphragm		1-555 to 1-360
	Gullet		1-444 to 1-266
<i>Camelus Dromedarius</i> , <i>Linn.</i>	Right ventricle ...	1-1143 to 1-1000	
	Gullet		1-1143 to 1-333
	Diaphragm		1-400 to 1-222
	Femoral		1-250 to 1-222
<i>Ovis Aries</i> , <i>Linn.</i>	Gullet		1-666 to 1-250

Table (continued).

Animal.	Muscle.	Diameter.	
		In the Heart.	In Voluntary Muscle.
Ovis Tragelaphus, <i>Desm.</i> ...	Auricles and ventricles	1-1777 to 1-1143	
	Gullet		1-800 to 1-400
Capra Hircus, var., <i>Linn.</i> ...	Left ventricle ...	1-2666 to 1-1333	
	Gullet		1-666
Antilope Bubalis, <i>Pall.</i>	Ventricles	1-1600 to 1-1000	
	Auricles	1-4000 to 1-2000	
	Gullet		1-1777 to 1-555
Cervus Wapiti, <i>Mit.</i>	Gullet		1-666 to 1-400
C. Dama, <i>Linn.</i>	Masseter		1-1000 to 1-333
	Gullet		1-400
Ditto (foetus, 6 inches long)	Ventricles	1-4000	
	Diaphragm		1-1600
Ditto (20 inches long)	Left ventricle ...	1-3200	
	Gullet		1-2666
Lepus cuniculus, <i>Linn.</i>	Left ventricle ...	1-3000 to 1-1000	
	Diaphragm		1-800 to 1-333
	Gullet		1-1000 to 1-600
	Pectoral & Psoas		1-533 to 1-400
L. timidus, <i>Linn.</i>	Left ventricle ..	1-2000 to 1-800	
Dasyprocta aurata, <i>F. Cuv.</i> ...	Gullet		1-470
Sciurus Palmarum, <i>Briss.</i> ...	Gullet		1-1000
S. vulgaris, <i>Linn.</i>	Left ventricle ...	1-2000 to 1-1000	
	Pectoral		1-600 to 1-444
Cavia Cobaya, <i>Gmel.</i>	Right ventricle...	1-1333 to 1-800	
	Auricles	1-2400 to 1-1714	
	Gullet		1-1600 to 1-400
Ditto (just born)	Left ventricle ...	1-3200 to 1-2000	
	Gullet		1-2000 to 1-1000
Mus decumanus, <i>Linn.</i>	Ventricle(bands)	1-4000 to 1-2666	
	Ditto (fascicles)	1-1333 to 1-800	
	Pectoral		1-800 to 1-383
Arvicola amphibia, <i>Desm.</i> ...	Diaphragm		1-500 to 1-444
	Pectoral		1-444 to 1-263
	Gullet		1-666
Macropus Bennettii, <i>Waterh.</i>	Left ventricle ...	1-1333 to 1-800	
	Gullet		1-1000 to 1-333
	Diaphragm and Psoas		1-888 to 1-307
Petaurus sciureus, <i>Geoff.</i> ...	Ventricle	1-1600 to 1-800	
	Gullet		1-666 to 1-440
Strix flammea, <i>Linn.</i>	Ventricles	1-3200 to 1-2000	
	Pectoral		1-727 to 1-333
Garrulus glandarius, <i>Flem.</i> ...	Ventricle	1-3000 to 1-1333	
	Pectoral		1-555 to 1-400
Corvus Pica, <i>Linn.</i>	Ventricles	1-3000 to 1-1455	
	Pectoral		1-666 to 1-400
Ditto (one-third grown).....	Ventricle	1-4000 to 1-1600	
	Pectoral		1-2000 to 1-1333
C. monedula, <i>Linn.</i>	Ventricle	1-2400 to 1-2000	
	Pectoral		1-800 to 1-500
C. frugilegus, <i>Linn.</i>	Ventricle	1-3000 to 1-1600	
Sturnus vulgaris, <i>Linn.</i>	Ventricle	1-4000 to 1-2000	
	Pectoral		1-666 to 1-422

Table (continued).

Animal.	Muscle.	Diameter.	
		In the Heart.	In Voluntary Muscle.
<i>Sylvia Luscinia, Lath.</i>	Ventricle	1-3200	
<i>Turdus musicus, Linn.</i>	Ventricle	1-2666 to 1-1090	
	Pectoral		1-800 to 1-500
<i>Motacilla alba, Linn.</i>	Ventricle	1-4000 to 1-2666	
	Pectoral		1-500
<i>Fringilla domestica, Linn.</i> ...	Ventricle	1-2666 to 1-1714	
	Pectoral		1-666 to 1-300
<i>F. Chloris, Temm.</i>	Ventricle	1-2400 to 1-1714	
	Pectoral		1-666 to 1-500
<i>Parus cæruleus, Linn.</i>	Ventricle	1-3000 to 1-2000	
	Pectoral		1-570 to 1-400
<i>P. caudatus, Linn.</i>	Ventricle	1-2900 to 1-2000	
	Cervical		1-1000 to 1-800
	Pectoral		1-666 to 1-500
<i>Picus minor, Linn.</i>	Ventricle	1-4000 to 1-1777	
	Pectoral		1-800 to 1-300
<i>Cuculus canorus, Linn.</i>	Ventricle	1-4000 to 1-2000	
	Pectoral		1-500
<i>Cypselus Apus, Flem.</i>	Ventricle	1-4000 to 1-1777	
	Pectoral		1-666 to 1-400
<i>Columba domestica, Auct.</i> ...	Ventricles	1-3200 to 1-1600	
	Trapezium		1-1000 to 1-470
<i>Phasianus nycthemerus, Auct.</i>	Ventricles (bands)	1-4000 to 1-2666	
<i>Gallus domesticus, Auct.</i> ...	Heart (bands) ...	1-4000 to 1-2666	
	Pectoral		1-363 to 1-300
<i>Struthio Camelus, Linn.</i> ...	Ventricle	1-3000 to 1-1600	
	Auricle	1-4000 to 1-2000	
	Abdominal		1-400
<i>Anthropoides Virgo, Vieill.</i> ...	Ventricle	1-4000 to 1-2666	
<i>Ardea cinerea, Lath.</i> (half-grown)	Ventricles	1-4000 to 1-2666	
	Pectoral		1-2000 to 1-666
	Cervical		1-800 to 1-400
<i>Gallinula chloropus, Lath.</i> ...	Ventricle	1-2666 to 1-1000	
	Pectoral		1-1333 to 1-570
<i>Sterna Hirundo, Linn.</i>	Ventricles	1-4000 to 1-2000	
	Pectoral		1-800 to 1-666
<i>Anas galericulata, Auct.</i> ...	Ventricle (bands)	1-5333 to 1-2000	
<i>Somateria mollissima, Leach.</i>	Ventricle (bands)	1-4000 to 1-3200	
	Pectoral		1-800 to 1-500
<i>Natrix torquata, Ray</i>	Auricle (bands) .	1-5000 to 1-3000	
	Ventricle (fascicles)	1-1000 to 1-600	
	Dorsal		1-444 to 1-270
<i>Anguis fragilis, Linn.</i>	Ventricle (bands)	1-4570 to 1-2000	
	Dorsal		1-400 to 1-290
<i>Vipera communis, Leach.</i> ...	Ventricle (bands)	1-6000 to 1-2900	
	Intercostal		1-200 to 1-222
<i>Rana temporaria, Linn.</i>	Femoral		1-300 to 1-120
	Ventricle	1-4500 to 1-2400	
<i>Triton palustris, Flem.</i>	Ventricle	1-1000 to 1-666	
	Auricle	1-5000 to 1-2000	
	Femoral		1-500 to 1-266
<i>Iguana Cyclura, Cuv.</i>	Ventricle (bands)	1-4000	

Table (continued).

Animal.	Muscle.	Diameter.	
		In the Heart.	In Voluntary Muscle.
Iguana Cyclura, Cuv.	Auricle(fascicles)	1-1000	
	Pectoral		1-240 to 1-100
Alligator	Ventricle and auricle	1-4000 to 1-2000	
	Abdominal		1-400 to 1-123
Testudo Græca, Auct.	Femoral		1-500 to 1-400
Cottus Gobio, Linn.	Gullet		1-1714 to 1-666
	Dorsal		1-400 to 1-141
Cyprinus Cephalus, Linn. ...	Dorsal		1-266 to 1-150
C. Barbus, Linn.	Ventricle	1-5333 to 1-2666	
	Dorsal		1-240 to 1-160
	Gullet		1-1200 to 1-571
Anguilla vulgaris, Linn.	Gullet		1-2000 to 1-888
	Dorsal		1-600 to 1-150

Mr. Gould exhibited to the Meeting an extensive collection of Australian *Halcyonidæ*, and characterized two new species belonging to this family as follows:—

HALCYON PLATYROSTRIS. *Halc. capite, dorsoque ex æruginè viridibus; alis caudæque virescenti-cæruleis; guld pallidè luteolâ, hâc colore gradatim apud nucham et partes corporis inferiores in ceruinum, vel arenaceo-luteolum transeunte.*

Spot before the eye buff; head and back verditer green; wings and tail greenish blue; throat very pale buff, gradually passing into the rich sandy buff of the back of the neck and the whole of the under surface; bill black; the base of the under surface of the lower mandible flesh-white.

Total length, $7\frac{1}{4}$ inches; bill, $1\frac{3}{4}$; wing, $3\frac{1}{4}$; tail, $2\frac{1}{2}$; tarsi, $\frac{1}{2}$.

Hab. Navigators Islands.

For the knowledge of this new species Mr. Gould is indebted to the kindness of Mr. Cunningham, who collected it, and to Mr. Bennett, at Sydney, at whose suggestion Mr. Cunningham presented it, with some other interesting birds, to Mr. Gould, for the advancement of zoological science.

HALCYON SORDIDUS. *Halc. capite, dorso, plumis scapularibus tetricibusque alarum fusciscenti-virescentibus, alis virescenti-cæruleis, tertiariis ad apicem viridi-tinctis; caudâ virescenti-cæruleâ; torque collarii, corporeque inferiore pallidè luteolis.*

Hab. North coast of Australia.

Head, back, scapularies and wing-coverts brownish oil-green; wings greenish blue, gradually changing into green on the tips of the tertiaries; collar surrounding the back of the neck and all the under surface buffy white; tail greenish blue; upper mandible and tip of the lower one black; base of the latter flesh-white.

Total length, 9 inches; bill, $2\frac{1}{4}$; wing, $4\frac{1}{4}$; tail, 3; tarsi, $\frac{5}{8}$.

From the collection of Benjamin Bynoe, Esq.