the possession of powder-down patches, in the oil-gland being nude (?*Mesites*), and in the interruption of the dorsal tract in the neighbourhood of the scapulæ. Pterylographically, therefore, there is no special reason to unite these forms with the Rails. Judging from M. Milne-Edwards's account and figures of the osteology of *Mesites*, numerous differences between these two forms also exist in the osseous parts of their structure. In particular, the fact of *Mesites* being schizorhinal is a strong point in view of its relationship being, along with *Rhinochetus* and its allies, to the Pluvialine group, where I have already[1] placed it. In spite of M. Milne-Edwards's remarks[2], I see no reason for doubting the value of the schizorhinal character of the nasal bones as a mark of the genetic affinities of birds, especially when, as in the present case, other facts point in the same direction.

I should be inclined therefore to consider (1) that *Mesites*, *Eurypyga*, and *Rhinochetus* have all sprung from some common ancestor, which must have been a generalized Pluvialine form provided with powder-down tracts; (2) that of the forms which this common stock gave rise to, all have become extinct save the three in question, which, having become isolated in three widely separated localities, have each acquired certain special characters not found in the others; (3) that, judging at least from the pterylosis, the Malagash *Mesites* is perhaps more nearly related to the New-Caledonian *Rhinochetus* than to the Neotropical *Eurypyga*.

5. Notes on the Anatomy of *Erethizon dorsatus*. By St.-George Mivart.

[Received February 16, 1882.]

Having had an opportunity, through the kindness of Dr. Günther, of examining a spirit-specimen of *Erethizon dorsatus*, the following points have appeared to me possibly of some interest.

The *tongue* is long and narrow, its extreme length being 4″·7 and its greatest breadth (at its hindmost end) being 1″·4; close to the tip it is only ·5 (cent.)[3]. Its hinder margin has a deep median notch. The intermolar eminence is considerable. There is no median groove on the dorsal surface; and there are but two oval and rather large circumvallate papillæ at the hinder margin of the tongue. The long axes of these two papillæ diverge forwards and outwards. The surface of the dorsum of the tongue is, for its anterior half, covered

[1] Ibis, 1881, p. 4, and P. Z. S. 1881, p. 644.

[2] The greater or lesser size of the beak will *not* account for the schizorhinal or holorhinal character of the nares, as suggested by M. Milne-Edwards. Else why should the big-billed *Plataleæ*, Ibises, *Didunculus*, *Laridæ*, *Alcidæ*, be *all* schizorhinal, whilst the slender-billed Rails, *Colymbidæ*, and such *Tubinares* as *Puffinus* and *Procellaria*, to say nothing of such forms as the *Meropidæ*, *Dendrocolaptidæ*, and *Nectariniidæ*, are all equally holorhinal? Nor can I admit with M. Milne-Edwards that the *Pteroclidæ* are related to the *Gallinæ*, or the *Ibididæ* to *Tantalus*, there being plenty of collateral evidence to prove the reverse. Hence any argument based on such assumed affinities also fails.

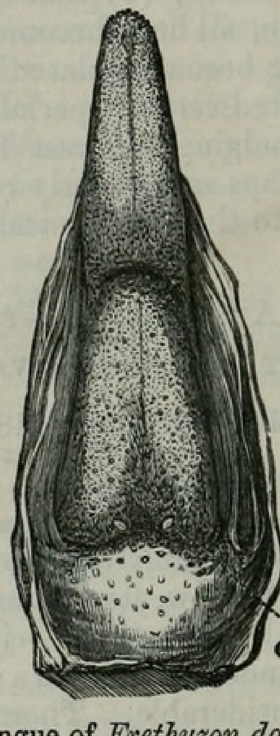
[3] In this paper all the measurements are in centimetres, except where otherwise expressed.

evenly with small, fine, soft conical papillæ directed backwards. Amongst them a few round fungiform papillæ are scattered; but these become much more conspicuous on the intermolar eminence. There is no sublingua.

The *salivary glands* are very largely developed.

The *parotid* is exceedingly large and of very loose texture, its very numerous lobules being very much scattered and in part loosely coherent. It is arranged in two superimposed layers in folds of gland-substance, and extends over the whole side of the neck, where it forms a large mass dipping into a triangular cavity above the *cleido-mastoid* muscle, between it and the *levator claviculæ*, and even a little beyond the clavicle. Its anterior margin is strongly concave forwards, extending almost as far anteriorly

Fig. 1.



Tongue of *Erethyzon dorsatus*.
cv, circumvallate papillæ.

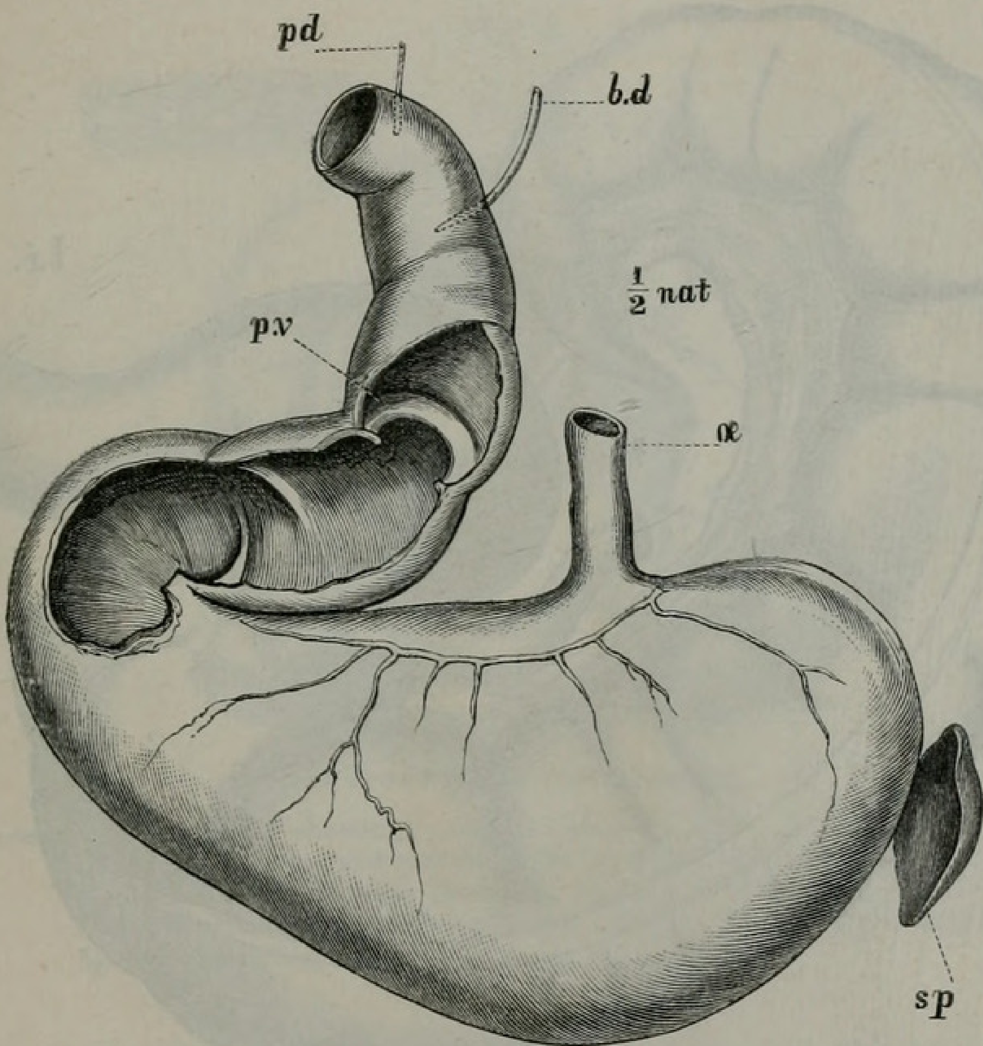
beneath the mandibular angle as it does in front of the opening of the external auditory meatus. Its duct runs forwards across the masseter muscle, just below and parallel with the lower border of the zygoma, to open beside the anterior molar tooth.

The *submaxillary* is large and of very similar texture to, but only between $\frac{1}{3}$ and $\frac{1}{4}$ the size of the parotid. It is pyriform in shape, lying beside the inner border of the masseter, and separated from its fellow of the opposite side by the sternohyoid muscles. Its duct runs forwards along the inferior margin of the masseter muscle to end as usual. The length of the submaxillary is about $2''\cdot4$, its breadth about $1''\cdot5$. The gland is almost divisible into two parts, the hinder and larger part being crescentic and placed just behind, beneath, and within the angle of the mandible. The duct runs forwards from the more anterior part of the gland.

There is a considerable *zygomatic* gland placed beside the upper molars, its duct opening in the vicinity of the last upper molar.

The *œsophagus* is rather narrow above ($1''\cdot0$ in diameter), and extends for $2''\cdot3$ beyond the diaphragm.

Fig. 2.



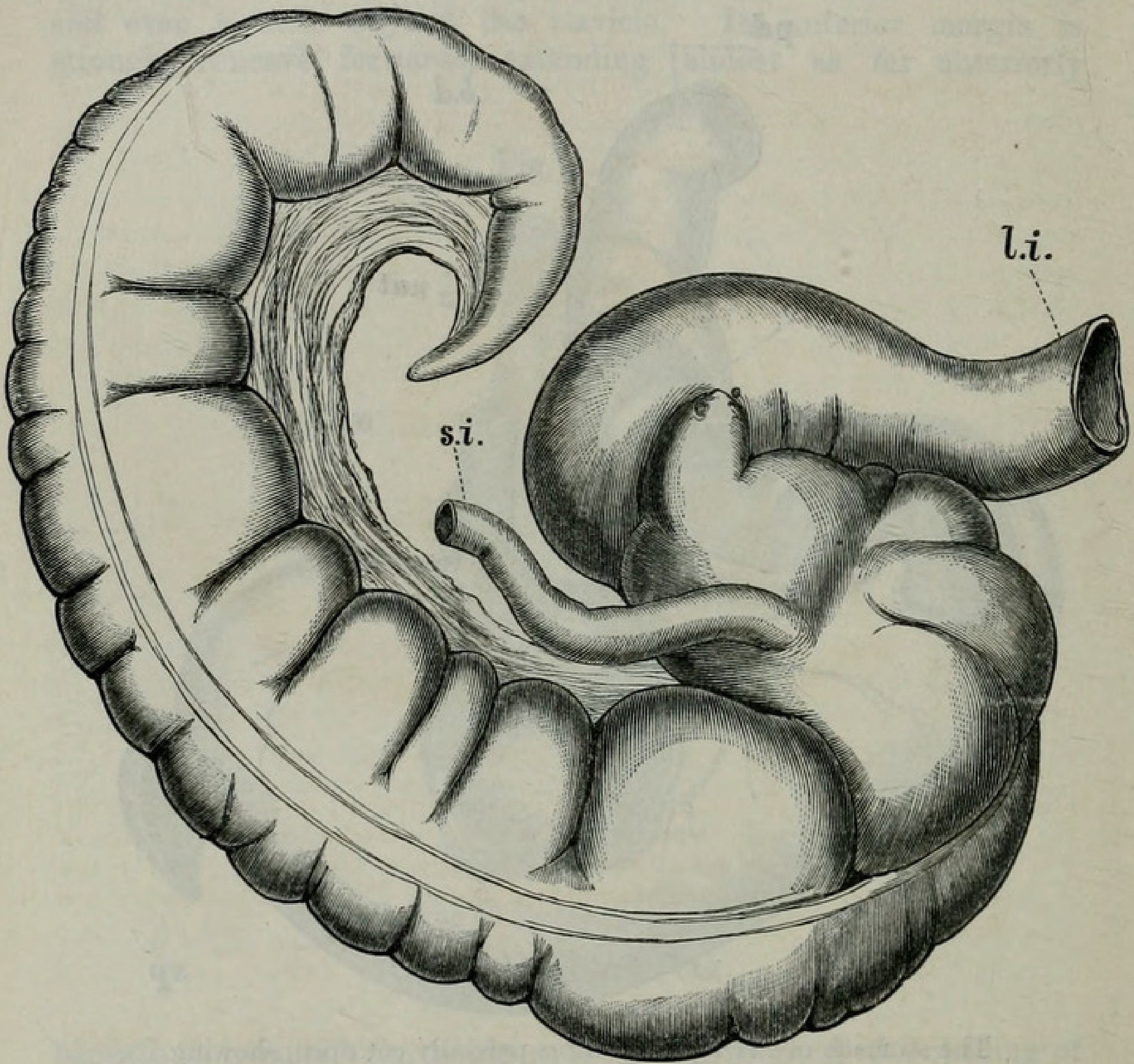
The stomach of *Erethizon dorsatus* partially cut open, showing the two internal folds.

œ, œsophagus; *b.d*, bile-duct; *p.d*, pancreatic duct; *p.v*, pyloric valve; *sp*, spleen.

The *stomach* is an elongated pyriform viscus, bent very sharply on itself towards its pyloric end. Its walls are very thin; and there are no longitudinal internal folds nor any marked transverse folds, except two. One of these is situated about an inch from the pyloric valve, on the convex side of the pyloric flexure (*i. e.* on the stomach's greater curvature); the other, less marked, on the concave side of and close to the flexure of the pylorus, on the cardiac portion of the stomach. The cardia is largely developed, extending 4″·5 beyond the entrance of the œsophagus. The stomach of this species is much longer relatively than that of *Hystrix javanicus*, and it differs from the stomach of that species in having no sacculus between the cardia and pylorus.

Length of the stomach, measured along its middle, in its naturally

Fig. 3.



Exterior of the cæcum of *Erethizon dorsatus*.

l.i, large intestine; *s.i*, small intestine.

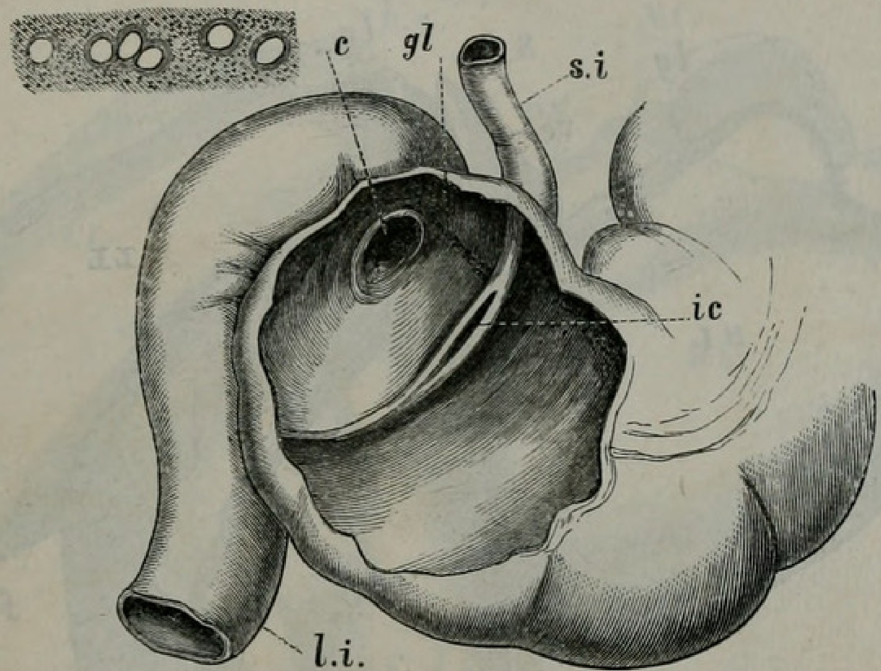
curved condition, 26″·6; vertical diameter of stomach at entrance of œsophagus 7″·6; its diameter at pyloric flexure 7″·6, from pyloric valve to entrance of bile-duct 3″·3, from entrance of bile-duct to that of pancreatic duct 2″·5.

The general arrangement of the intestine appeared to correspond closely with that found in the Guinea-pig,—folds of large intestine being arranged immediately behind the stomach and right segment of the liver; a conspicuous fold of small intestine lay towards the right side of the hinder part of the abdominal cavity, while the voluminous cæcum occupied its middle and part of its hindmost portions.

The small intestine measured 13 feet 3 inches. The large intestine measured 10 feet 9 inches—the whole intestine thus measuring 24 feet.

The diameter of the duodenum at its commencement is 3″·3; but at 2″·5 (1 inch) from the pyloric valve it contracts to 2″.

Fig. 4.



The cæcum of *Erethizon dorsatus.*

Interior of the cæcum, showing:—*ic*, the ileo-cæcal valve; *c*, the valvular constriction at the commencement of the large intestine; and *gl*, the line of glands extending between these two apertures. The colic pouch is the rounded prominence just beneath the letter *c*. The glands enlarged are figured separately.

The diameter of the ileum about 2″·5 (1 inch) from the ileo-cæcal valve is 1″·5. That of the colon at its first curve (just beyond the pouch of which its proximal end consists) is 3″·3; but 17″·8 (7 inches) nearer the anus it is only 1″·8.

The lower portion of the large intestine, however, is smaller in calibre than in the so-called small intestine.

The villi of the small intestine are short, but delicate and close-set. There are a few solitary glands in the large intestine.

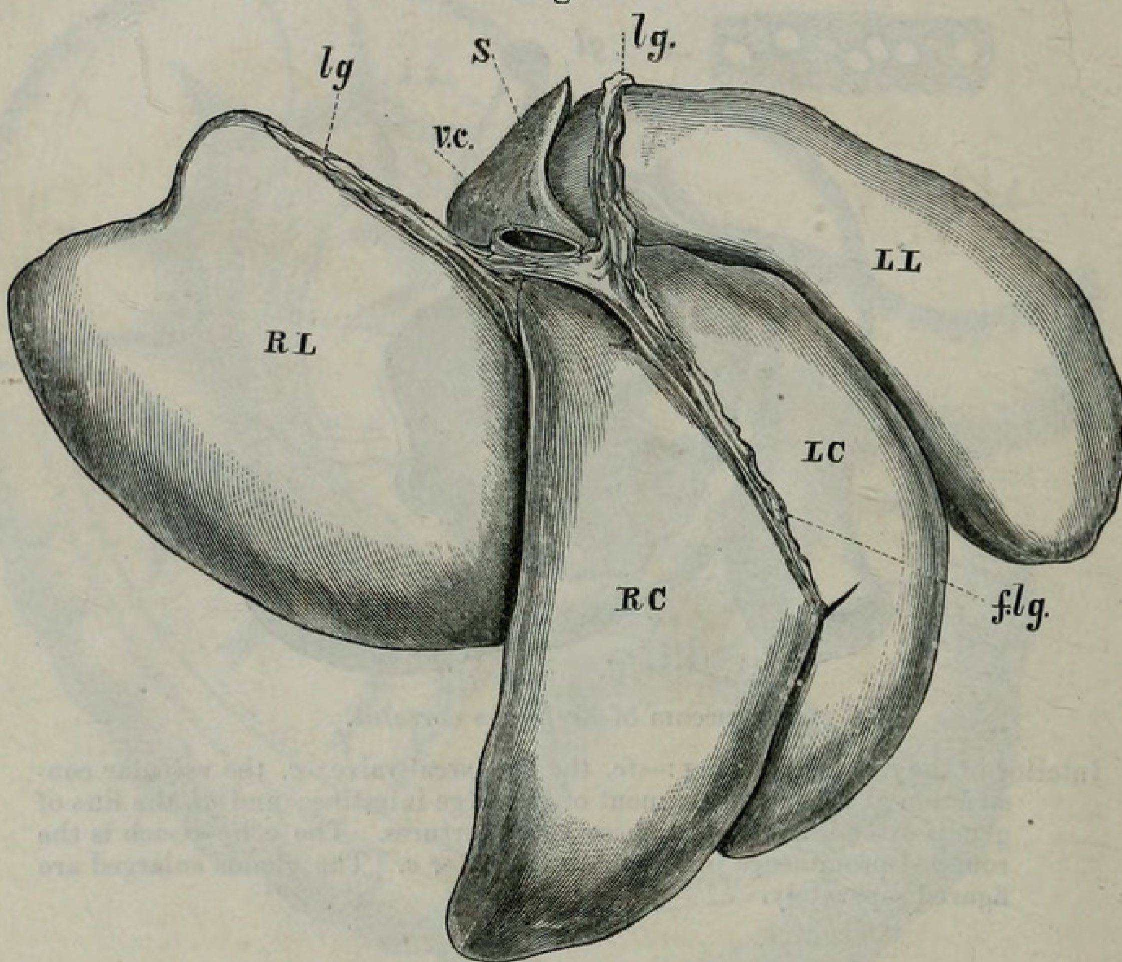
In the small intestine there are seventeen Peyer's patches—nine large and oval, and eight exceedingly small.

In the first five feet of the large intestine there is a series of glands, from 1″·2 to 3″·8 apart, situated along the free margin of the gut. Each consists of a little aggregation of from three to five crypts.

The colon is smooth and not sacculated, save slightly at its commencement, where one of the bands of the cæcum is continued upon it.

The cæcum is very large, and appears even yet larger than it is, because the proximal end of the colon, *l. i*, is dilated into a colic pouch which is 5″·3 ($2\frac{1}{10}$ inches) in diameter. There is no *sacculus rotundus* as in the Hare and Rabbit. The total length of the

Fig. 5.



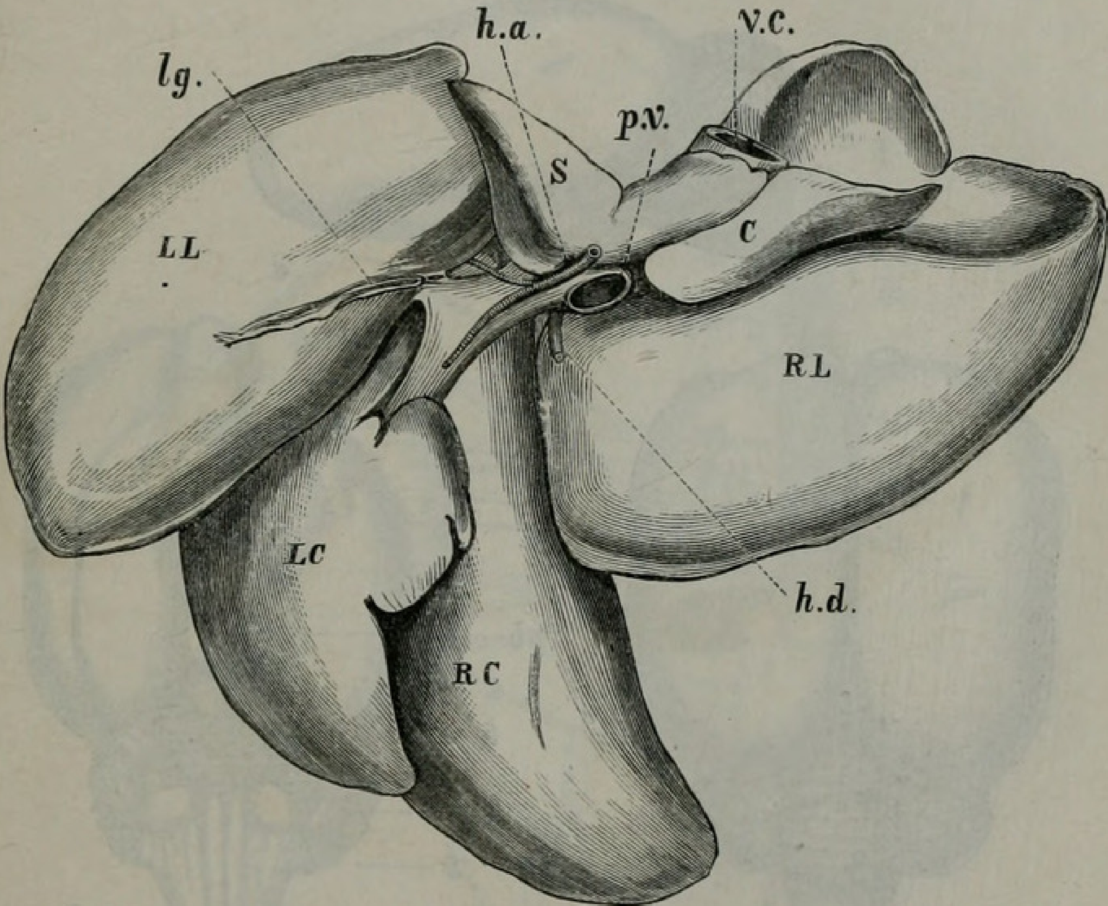
Diaphragmatic aspect of the liver of *Erethizon dorsatus*.

f.lg, falciform ligaments; *lg*, ligament; LC and LL, left central and left lateral lobes; RC and RL, right central and right lateral lobes; S, spigelian lobe; *v.c*, vena cava.

cæcum, measured (as curved) along its middle is 28 inches. Its breadth at the opening into it of the small intestine is 8″.1 ($3\frac{2}{10}$ inches).

There are three longitudinal bands, one extending along the concavity of the viscus, where the mesentery is attached, and one on each side. Only one of the three bands is continued upon the colon, namely the band (that on fig. 4) which extends along that side of the cæcum which is opposite the entrance of the ileum. This band is much more marked on the colon of *Hystrix cristata* than on that of *Erethizon*. There is the normal ileo-cæcal valve, and besides this a very remarkable valvular constriction, or circular reduplication (*c*), at the entrance into the large intestine from the cæcum. It is something like the pyloric valve, only less defined, especially on one side[1]. An essentially similar structure exists in the Guinea-pig, of which I have not met with any description. There is no spiral valve in the cæcum, but only a series of constrictions

Fig. 6.



Abdominal aspect of the liver of *Erethizon dorsatus*.

Letters as before; and C, caudate lobe; *h.a*, hepatic artery; *h.d*, hepatic duct; *p.v*, portal vein.

corresponding to the sacculi formed by the longitudinal bands. There are no Peyer's patches; but there is a chain of glands (sixteen, single or in pairs) which extends across from the ileo-cæcal valve to the cæco-colic aperture.

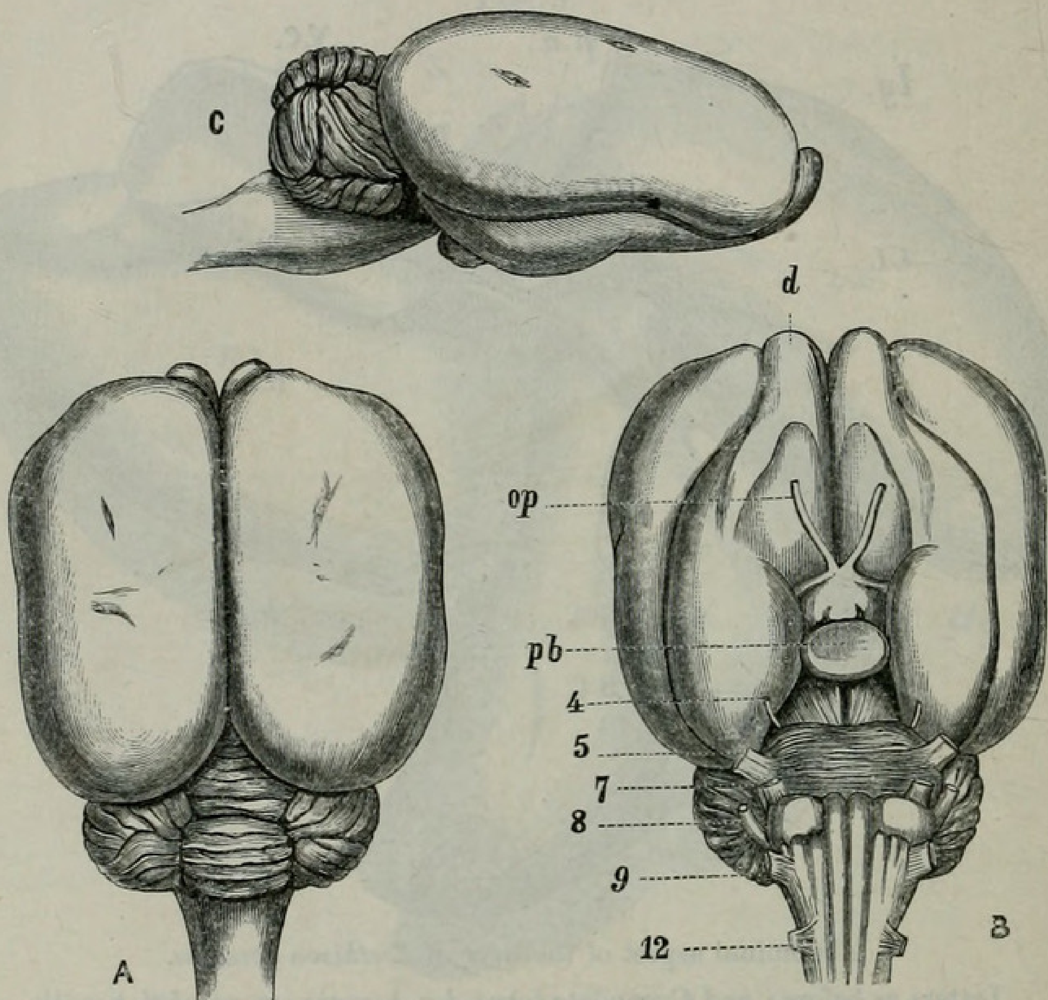
The *liver* consists of the normal four large lobes, with a small Spigelian and caudate lobe. There was, however, no gall-bladder in the specimen examined. The right segment is much larger than

[1] A preparation showing this structure, made from the specimen here described, has been preserved in the Museum of the Royal College of Surgeons.

the left segment. The left lateral lobe is larger than the left central. The right lateral lobe extends more transversely than dorso-ventrally; roughly estimated, it about equals the left lateral lobe in size. The right central lobe is quite undivided, showing only a superficial furrow on the middle of its abdominal surface. The Spigelian and caudate lobes are both triangular in outline; and neither exhibits any segmentation.

Thus the liver of *Erethizon* differs much from that of *Hystrix javanica*. In the latter I find[1] that, though it agrees in having

Fig. 7.



Brain of *Erethizon dorsatus*.

A, upper surface; B, ventral surface; C, side view; *d*, olfactory lobe; *op*, optic nerves; *p.b*, pituitary body; 4, 5–7, 8, 9–12, pathetic, trigeminal, facial, auditory, glossopharyngeal, and hypoglossal nerves.

the right segment much larger than the left, yet the left central lobe is larger than the left lateral one; that the right lateral lobe extends mainly dorso-ventrally; that the right central lobe has a very deep cystic notch, in which a gall-bladder is found; that the right lateral lobe is larger than the left lateral lobe; that the left

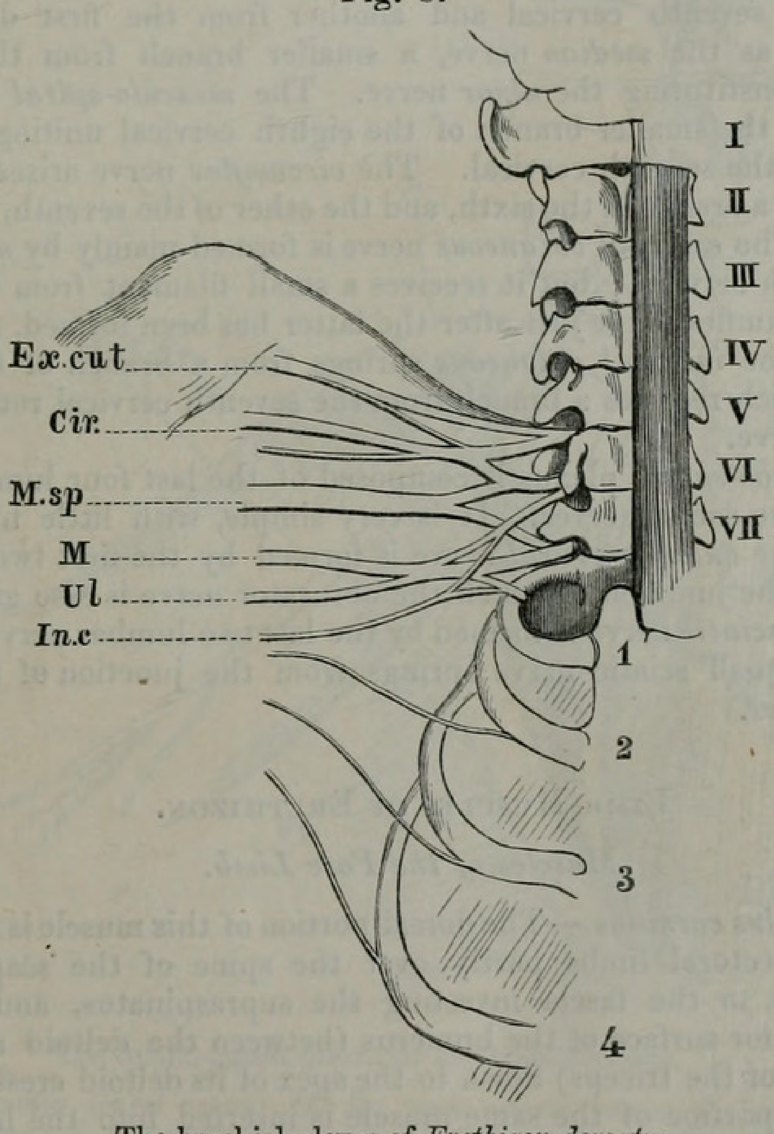
[1] From a specimen (no. 808 c) in the Museum of the Royal College of Surgeons.

central is larger than the left lateral; and that the Spigelian lobe is larger both relatively and absolutely, and is also distinctly notched; and that the caudate lobe is larger and more slender. How far these may be individual peculiarities I am of course unable to say.

The *spleen* was very different in form from that of *Hystrix javanica.* In the latter it is much elongated, while in *Erethizon* it is oval in shape and somewhat flattened. Its length is 3″·3, its breadth 2″.

The *lungs* consist of three lobes on the right side and two on the left, whereof the upper left lobe is divided by two deep notches.

Fig. 8.



The brachial plexus of *Erethizon dorsatus.*

I–VII, cervical vertebræ; 1, 2, 3, 4, the first four ribs; *cir*, circumflex nerve; *Ex. cut*, external cutaneous; *In.c*, internal cutaneous; *M*, median, *M.sp*, musculo-spiral; *Ul*, ulnar.

The *heart* is very rounded at its apex.

The *aorta* gives off a large innominate artery, from which the right subclavian and the two common carotids arise. The left subclavian is given off separately.

The female sexual organs have been described by Hunter; see his 'Essays and Observations,' vol. ii. p. 223.

The *brain* presents a much less decidedly quadrate form than that of the Porcupine (most probably *Hystrix cristata*) figured by Leuret[1]; and it is even more smooth, there being but a single short and slight depression (or rudimentary sulcus) at the hinder end of the most anterior third of the dorsum of each cerebral hemisphere. The pituitary body is very large, and the corpora trapezoidea well developed.

The *brachial plexus*[2] is formed by the sixth, seventh, and eighth cervical nerves together with the first dorsal.

The main part of the eighth cervical, having received a branch from the seventh cervical and another from the first dorsal, is continued as the *median* nerve, a smaller branch from the same junction constituting the *ulnar* nerve. The *musculo-spiral* nerve is formed by the smaller branch of the eighth cervical uniting with a portion of the seventh cervical. The *circumflex* nerve arises by two roots—one a branch of the sixth, and the other of the seventh, cervical nerves. The *external cutaneous* nerve is formed mainly by a branch of the sixth cervical; but it receives a small filament from the root of the circumflex nerve just after the latter has been formed, as above stated. The *internal cutaneous* springs from a branch of the first dorsal, which receives a branch from the seventh cervical root of the median nerve.

The *lumbo-sacral* plexus is composed of the last four lumbar and the first two sacral nerves. It is very simple, with little interlacement. The *anterior crural* nerve is formed by the first two of the six, from the junction of which the obturator nerve is also given off. The *great sciatic* nerve is formed by the last two lumbar nerves only; while the small sciatic nerve springs from the junction of the two sacral nerves.

Limb-Muscles of Erethizon.

Muscles of the Fore Limb.

Panniculus carnosus.—The dorsal portion of this muscle is inserted into the pectoral limbs partly over the spine of the scapula by attachment to the fascia investing the supraspinatus, and partly into the outer surface of the humerus (between the deltoid and the outer part of the triceps) down to the apex of its deltoid crest. The abdominal portion of the same muscle is inserted into the humerus outside the greater tuberosity and inside the upper part of the deltoid crest.

The *pectoralis* is so united with the ventral part of the panniculus that they seem like two parts of one muscle. The true pectoralis, however, arises from the sternum, and is inserted into the distal

[1] See plate iii. of Leuret and Gratiolet's 'Anat. Comp. du Système Nerveux.'

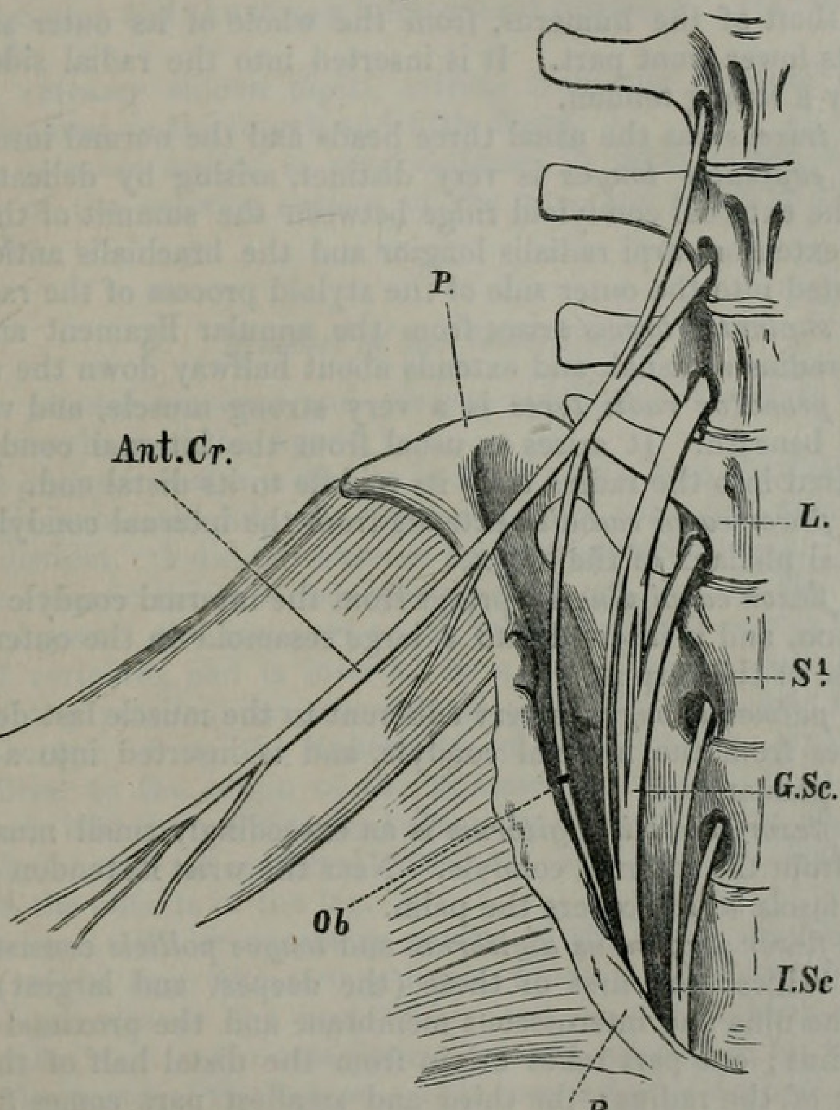
[2] The brachial and lumbo-sacral plexuses were dissected out for me by Mr. W. Pearson; and the drawings are from his dissections.

half of the deltoid crest of the humerus, being much connected with the adjacent part of the deltoid, and a portion running on to fuse with the brachialis anticus.

The *sternocleido-mastoid*, arising as usual, is inserted into the antero-posteriorly extending ridge just behind the opening of the external auditory meatus.

The *levator claviculæ* arises, by a strong tendon, from the hypapophysial tubercle on the middle of the ventral surface of the atlas.

Fig. 9.



The lumbo-sacral plexus of *Erethizon dorsatus.*

Ant. cr, anterior crural nerve; *G. Sc.*, great sciatic nerve; *L*, last lumbar vertebra; *I. Sc*, small sciatic nerve; *Ob*, obturator nerve; *P*, pelvis; S^1, first sacral vertebra.

Expanding in a fan-shaped manner, it is inserted into fascia investing the acromion and the greater tuberosity of the humerus, its fibres mingling with those of the dorsal part of the panniculus carnosus.

The *latissimus dorsi* sends on a dorso-epitrochlear to the olecranon.

The *subscapularis* is a strong muscle arising from the cartilage of the first rib, and inserted into the outer part of the clavicle.

The *deltoid* has a distinct clavicular portion, as well as that from the metacromion and fascia investing the infraspinatus.

The *supraspinatus, infraspinatus, teres major, teres minor,* and *subscapularis* are as in the Agouti[1].

The *biceps* has the usual two heads and radial insertion.

The *coracobrachialis* consists of two parts—one descending to the middle of the humerus, the other down to the internal condyle.

The *brachialis anticus* takes origin from the back of the summit of the shaft of the humerus, from the whole of its outer side, and from its lower front part. It is inserted into the radial side of the ulna by a strong tendon.

The *triceps* has the usual three heads and the normal insertion.

The *supinator longus* is very distinct, arising by delicate fascia from the external condyloid ridge between the summit of the origin of the extensor carpi radialis longior and the brachialis anticus. It is inserted into the outer side of the styloid process of the radius.

The *supinator brevis* arises from the annular ligament and shaft of the radius as usual, and extends about halfway down the radius.

The *pronator radii teres* is a very strong muscle, and very tendinous beneath. It arises as usual from the internal condyle, and is inserted into the radius from its middle to its distal end.

The *flexor carpi radialis* extends from the internal condyle to the proximal phalanx of the index.

The *flexor carpi ulnaris* springs from the internal condyle and the olecranon, and is inserted into a large sesamoid on the outer side of the base of the carpus.

The *palmaris longus* is very adherent to the muscle last described. It arises from the internal condyle, and is inserted into a cartilaginous palmar disk.

The *flexor sublimis digitorum* is an exceedingly small muscle. It arises from the internal condyle. Near the wrist its tendon expands into a fascia which covers the palm.

The *flexor profundus digitorum* and *longus pollicis* consist of four fleshy bellies: the first of these (the deepest and largest) springs from the ulna and interosseous membrane and the proximal part of the radius; one part takes origin from the distal half of the flexor surface of the radius; the third and smallest part comes from the internal condyle; while the fourth part arises from the proximal part of the flexor surface of the ulna. These bellies end in a common tendon, which divides and goes to the five digits.

There are three *lumbrical* muscles, as in the Agouti[2].

The *pronator quadratus* extends over the lower (distal) half of the radius and ulna.

The *extensor carpi radialis longior* has a rather extensive origin from above the external condyle, quite distinct from that of the extensor carpi radialis brevior. It goes to the index, as usual.

[1] See P. Z. S. 1866, p. 399. [2] *L. c.* p. 403.

The *extensor carpi radialis brevior* is a larger muscle, and has a stronger tendon, than that last noticed, which overlaps it at its origin. It goes to the third metacarpal.

The *extensor communis digitorum* goes as usual from the external condyle to the four outer digits.

The *extensor carpi ulnaris* takes origin from the external condyle and adjacent parts of the ulna, and goes to the base of the fifth metacarpal.

The *extensor ossis metacarpi pollicis* is large and strong; it takes origin from the adjacent sides of the radius and ulna, but mainly from the ulna and the strong interosseous ligament. Its insertion is as usual.

The *extensor minimi digiti*, arising from the external condyle, sends tendons to the fourth and fifth digits.

The *extensor indicis* is very delicate; it takes origin from the middle of the exterior surface of the ulna, and sends its tendon to the index.

Muscles of the Hind Limb.

The *gluteus maximus* and *gluteus minimus* I found to be quite similar to those of the Agouti[1].

The *gluteus medius* is also as in the Agouti, save that the part of it which is inserted into the hinder side of the great trochanter is more distinct. I did not observe any distinct *scansorius*.

The *biceps* consists of two parts, which are very similar to those of the Agouti: the first part arises from the sides of the first four caudal vertebræ, and is inserted by a strong tendon into the outer side of the patella; the second part arises (being mainly tendinous at its origin) from the tuberosity of the ischium, external and superficial to the origin of the semimembranosus. It is inserted by fascia into the patella, the tuberosity of the ischium, the head of the fibula, and the external malleolus, and into the fascia which invests the outside of the leg.

The most slender accessory muscle of the biceps, or *tenuissimus*, takes origin from the strong fascia which binds down the dorsal caudal muscles at the root of the tail, on a line with the great trochanter, and at the anterior end of, and covered in by, the origin of the first part of the biceps. It is inserted into the heel and inner side of the sole of the foot; in its course it lies close to the hinder border of the second part of the biceps; at its insertion it unites with the plantar fascia, having a certain adhesion to the inner side of the tuberosity of the os calcis, and more to the plantar surface of the extra tarsal ossicle.

The *semimembranosus* also consists of two parts: one part, thick and fleshy, arises from the tuberosity of the ischium and the ramus below it. It goes to the upper half of the tibia (covered in by the

[1] See P. Z. S. 1866, p. 405. What was therein taken to be the *tensor vaginæ femoris* I now believe to be the *sartorius*.

insertion of the gracilis), and dips in beneath the internal lateral ligament of the lesser joint. The second part arises from the caudal vertebræ, beneath and closely connected with the hinder half of the origin of the first part of the biceps; it is inserted behind and above the inner condyle of the femur by a small, but strong, round tendon.

The *semitendinosus* has only a single origin (but a very extensive one) from the fascia investing the ilium, sacrum, and anterior caudal vertebræ; it is inserted into the groove on the outer side of the strong (deltoid-ridge-like) prominence on the front of the tibia, and by fascia into the tibia below and above that prominence. The upper part of its insertion is enveloped by that of the gracilis.

The *sartorius* arises from the anterior inferior spine of the ilium, and ends distally in the fascia investing the patella[1].

The *gracilis* consists of two distinct parts. The upper of these arises from the ilio-pectineal ridge and pubic symphysis; it is inserted into the inner side of the patella and head of the tibia, its aponeurosis of insertion being continuous with that of the second or lower part of the gracilis. This second part (which is very large) arises from the pubic symphysis and the adjacent ramus of the ischium; it is inserted into the front of the tibia from the patella to below the summit of the insertion of the semitendinosus.

The *adductor* is made up of four more or less distinct muscles:—

(1) Arises, beneath the gracilis, from the brim of the pelvis (ventrad of the origin of the pectineus) and from the front end of the pubic symphysis; it is inserted into the middle third of the back of the femur between the insertion of the pectineus and that of the second part of the adductor, its insertion descending below the insertion of the former, but not so low as that of the latter.

(2) The second part of the adductor (*adductor magnus*) arises from the symphysis pubis and the adjacent ramus of the ischium, covered in by the gracilis; it is inserted into the lower half of the middle of the posterior surface of the femur. There is no Hunter's canal, the great femoral artery passing along the inner side of the lower end of the muscle.

(3) This part (*adductor primus*) arises from the brim of the pelvis, dorsad of the origin of the first part of the adductor; it is inserted into the back of the femur, on the inner side of the first part of the adductor and closely connected with it, although not extending so far downwards, though it is conterminous above with that first portion.

(4) The fourth part of the adductor arises from the pubic symphysis beneath the adjacent parts of the origins of the first and second portions of the adductor. It passes down beside the hinder margin of the pectineus, and is inserted into the outside of the great trochanter. The great sciatic nerve passes down outside its insertion.

[1] This is the muscle which was described as the *tensor vaginæ femoris* in the Agouti (P. Z. S. 1866, p. 405); while what is there (p. 409) described as the sartorius, is really, I believe, the upper portion of the gracilis.

The *pectineus* extends from the brim of the pelvis dorsad of the origin of the third part of the adductor; it is inserted into the femur just below the lesser trochanter.

The *vastus externus* is very large, its origin extending right up to the summit of the great trochanter.

The *vastus internus* also extends very high up, namely up to the neck of the femur, dipping in within the insertion of the psoas.

The *crureus* extends up to the neck of the femur, and is very imperfectly separated from the vastus internus.

The *rectus femoris* has the usual origin and insertion.

The *tibialis anticus* is very large, but does not take origin from the femur; it arises from the head of the fibula and the upper third of the tibia. Below its ends are two tendons, one of which is inserted into side of the proximal end of the metatarsal of the hallux, while the other goes to the plantar surface of the ectocuneiforme.

The *extensor longus digitorum* arises by a tendon from the femur external to its rotular surface. It is a slender muscle, and sends tendons to the four outer digits.

The *extensor longus hallucis* is very slender and small, arising only from the distal third of the fibula.

The *extensor brevis digitorum* arises as usual, and sends tendons to the four outer digits.

The *peroneus longus* is the most external of the peronei muscles, and arises from the head of the fibula. Passing behind the external malleolus, it proceeds to the metatarsal of the hallux as usual.

The *peroneus brevis* arises from the antero-external aspect of the fibula. It is muscular down to the level of the malleolus, and ends in a very strong tendon (the largest of the peronei tendons), which is inserted into the proximal end of the fifth metatarsal.

The *peroneus quinti digiti* is very slender, both as to its muscular belly and its tendon. It arises from the outside of the fibula, beneath the peroneus longus and behind the peroneus brevis, and in contact with the flexor longus hallucis. It becomes tendinous above the external malleolus; and its slender tendon is inserted into the proximal part of the proximal phalanx of the fifth digit.

The *gastrocnemius* has but the two normal heads, and is inserted into the calcaneal tuberosity.

The *soleus* is very large and fleshy; it arises from the outer side of the upper two thirds of the fibula, and joins the tendo Achillis.

The *plantaris* takes origin from the pit on the outer side of the external condyle of the femur, beneath the external lateral ligament. It ends as in the Agouti[1].

The *popliteus* is as in the Agouti.

The *flexor longus digitorum* is a large muscle arising from the tibia beneath the popliteus; its tendon passes in a groove behind the internal malleolus, superficially to that of the tibialis posticus. It

[1] P. Z. S. 1866, p. 414.

unites with the tendon of the *flexor longus hallucis*—which is of great size, and takes origin from three fourths of the fibula; its very large tendon passes in a groove by itself (external to that of the flexor longus digitorum), and goes (after being joined by the tendon of the flexor longus digitorum) to the four outer toes.

The *tibialis posticus* is of about the same size as the flexor longus digitorum. It arises from the head of the fibula and the fascia between it and the popliteus and between it and the flexor longus hallucis, with which it is closely connected. Its fleshy belly is visible in the middle of the back of the leg, the gastrocnemius having been removed. Its tendon passes in a groove behind the internal malleolus, beneath that of the flexor longus digitorum, and, passing to the edge of the foot, is inserted into the naviculare.

The *flexor accessorius et brevis digitorum* seems to be represented by a small muscle which takes origin from the tibial side of the os calcis, and ends in two tendons, one of which is inserted into the second phalanx of the hallux, and the other into that of the index; while muscular fibres of what seems to be the same muscle are inserted into the deep flexor tendon common to the flexor longus digitorum and flexor longus hallucis.

March 7, 1882.

Prof. Flower, LL.D., F.R.S., President, in the Chair.

The Secretary exhibited some living examples of *Helix hæmastoma* from Point de Galle, Ceylon, which had been forwarded to the Society by Mr. J. Wood-Mason, F.Z.S., of the Indian Museum, Calcutta. Mr. Wood-Mason, writing on the subject, had remarked that "this Snail lives on the Cocoa-nut Palms; and it is interesting to find that the same *Alga* that is found on the trunks of the palms has established itself on the outside of the shell, on which it forms a protective coating. *Helix superba* has also a similarly green protective coating, rendering it less visible to passing birds."

The following papers were read:—