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CATALOGUE
OF
ANATOMICAL OBJECTS

CONSTITUTING THE MAIN PART OF THE MUSEUM

OF

PROFESSOR CLELAND

HANDED OVER BY AGREEMENT FOR THE USE OF
THE ANATOMICAL DEPARTMENT TO THE
UNIVERSITY OF GLASGOW

PART II

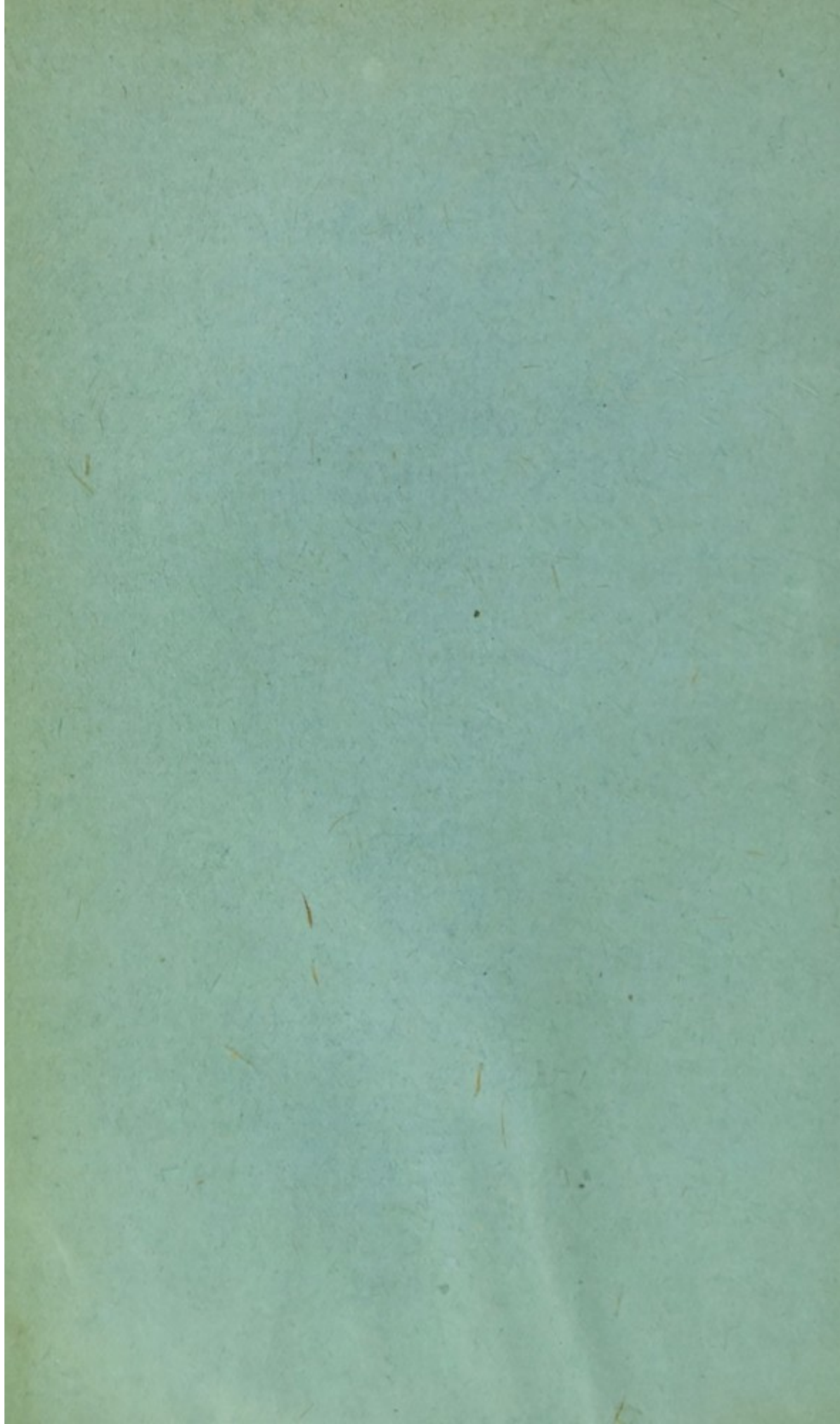
GLASGOW

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THE MUSEUM OF PROFESSOR CLELAND.

Preparations not specially marked are in Glass Jars. Those under shades are marked by means of the word "case" or "shade" before the number. Skeletal preparations not under shades are marked "skelet.," or "stand" when mounted on wood.

751. Human embryo, early part of third month ; over $1\frac{1}{2}$ inch long. Put up to show the condition of the skeleton. Clavicle ossified throughout, save quite at the extremities. Vertebral column shows no commencement of ossification. Shafts of ribs ossifying forward from their angles for more than half their length. Sternum, no ossification. One centre of ossification proceeding backward from neck of scapula. Shafts of humerus, radius and ulna, each an elongated ossification. Ossification just commencing in last phalanx of forefinger and middle finger, and on left side in that of the fourth and of the fifth digit. Ilium shows very slight ossification ; femur a shorter ossification than the humerus ; leg bones with ossifications about as long as those of the bones of forearm ; no ossification of feet. Occipital bone shows a symmetrical ossification corresponding with the two lower which have been figured in the expanded part of the occipital ; frontal shows ossific network along whole supraorbital ridge and ascending therefrom ; parietal shows network at lower and forepart. Neither frontal nor parietal appears to have the ossification starting from the eminence. Each half of mandible ossified throughout its length. Malar distinct, also zygomatic process. In the upper jaw it is impossible to make out separation of the palatal, superior maxillary and intermaxillary ; but three ascending processes can be seen on each side, probably corresponding with these three bones.

752. From the Ox—Lens, capsule and vitreous humour. The latter dissected forwards so as to show that it is made up of laminae.

753. Superficial femoral lymphatic glands of right side, with afferent and efferent ducts. The crural sheath is opened so as to display the femoral artery and femoral veins, and the septum between them.

754. Skeleton of Acanthias, in greater part; digested in the stomach of another fish. The beak and the left pectoral fin have been removed. In the skeleton may be noted in connection with the column the chevron elements completing hæmal arches and their relation to inferior elements of caudal fin; also the inter-spinal elements and their relation to the superior element of that fin. In connection with pectoral limb may be seen the view of parts which may be instructively compared with those in the skate and in osseous fishes; also the horny elements thatching the phalanges on both sides and corresponding with the phalanges seen in teleostei. It may be mentioned that these horny elements are enormously developed in the sting-ray. Note the disposition of certain cranial and other nerves.

755. Genitalia of female Python. A long slender pelvic bone is seen on each side with broader toe-like expansions at ventral extremity. A glass rod is passed into each oviduct, showing where it opens close to its neighbour of the opposite side on the dorsal aspect of the cloaca. Close to the orifice of the cloaca, on each side, there opens a long pouch with strong somewhat corrugated walls and a muscular covering, which last is dissected off on the left side; probably serves the purpose of a spermatophore, and certainly corresponds morphologically with the reversible penis in the male.

756. Double parts of Drake with additional leg. (Skeleton, 400, stand.) There are three cæca, one pair of testes, one pair of kidneys, one colon, one cloaca provided with two vents, each furnished with a separate penis and Bursa Fabricii. The right vent and penis are larger than the left.

757. Uterus, &c., from subject over 60 years of age. Uterus opened from behind. Numerous myomata on front and sides of uterus. Small mucous polypi in the fundus uteri. Both Fallopian tubes much diseased, with purulent cysts at the free extremity and in their course; those in the extremity being laid open. Both ovaries involved in inflammatory thickenings. Muscular walls of uterus hypertrophied. Os externum reduced

to a pinhole in the middle of a thick rounded projection, with an eruption on the vaginal surface. The vulva and vagina were large and open. The mammae were well developed. There were no signs on the mamma or abdominal wall of former suckling or labour. The body was that of a seamstress who fell down stairs and fractured her skull, being intoxicated. The articulated skeleton is preserved. For other particulars see 777.

758. (Dry, in jar) **Skeleton of newly hatched Goose with additional limb.** The additional limb is of an uncommon variety. Instead of being completely separate from the well-developed limbs, though at one side of the sacrum, it is adherent to and partly united with the right limb. The triangular composite pelvic bone generally met with in birds with additional limbs is undiscernible. A single thigh bone comes off immediately internal to the proper right femur, and is continued into a large leg bone more obviously composite, swelling out to its lower end, which has two condyles inferiorly. The internal of these two condyles has apparently not been continued into a metatarsal, but the outer condyle is continued into a metatarsal placed closely side by side with that belonging to the developed right limb, and continuous with the two metatarsal bones there is a foot consisting of seven toes, the four outer of which make together a right foot corresponding with the normal, but of small size. The remaining three toes belong to the additional limb, and the central of these is more largely developed than the other two, while the outermost is closely united to and symmetrical with the innermost of the four toes of the right limb proper.

759. (Dry, in jar) **Osseous tumours on Falx cerebri.** One on the right side, the other on the left; neither of them attacking the mesial fibrous septum of which the falx mainly consists, but growing in its covering, the tissue which I have pointed out to be a distinct parietal arachnoid. Picked up in the rooms by Dr. Samuel Cameron. Compare with the very similar specimens, 448 and 638.

760. **Pia mater and choroid plexuses from the back of the fourth ventricle and medulla oblongata.** The inferior cerebellar arteries and some nerve-roots are left. The specimen is put up to show the foramen of Magendie, the foramina of Lushka, and the choroid plexuses of the fourth ventricle. The so-called foramen of Magendie is in great part produced by removal of the ligulae, which were continuous externally with the margins exhibited, and inferiorly with the two bodies standing up on each side of the middle line, which constitute

the obex. A feather on each side of the opening into the cavity of the sub-pedunculated lobe (*flocculus*) which is bordered by a lateral prolongation of the choroid plexus, namely from the two lateral angles of the diamond which it incloses and which corresponds in position with the posterior velum.

761. Congenital deficiency of upper part of interventricular Septum. This specimen was originally preserved by Professor Allen Thomson, but required to be re-arranged and re-mounted. This was accordingly done in 1902. The slip of whalebone remains as placed by Prof. Thomson through the interventricular communication. The aorta and pulmonary artery are normal.

762. A right testicle, with calcification of spermatic artery, atrophy of the lower part of the epididymis and commencement of the vas deferens, and with the hydatid of Morgagni developed into an apparently cartilaginous tumour. Saved from the dissecting room by Dr. Samuel Cameron, 1902.

763. Cowper's glands. The ducts of the gland are traced forwards, but the specimen has been cut short above, immediately below their openings into the urethra. At the lower end, the preparation shows the urethra cut across in its membranous part, the commencement of the spongy urethra not obviously dilated, while the bulb of the corpus spongiosum descends a long way below it. Both right and left gland are in two parts; and on the right side these parts are only connected by union of two ducts, and it was noticed that the anterior of the two parts was imbedded in the bulbo-cavernosus muscle. The subject was a Kaffir of middle age.

764. Sertularia abietina, showing numbers of the capsules containing the young medusoids. Obtained from Dr. Bruce Young.

765. Open foramen ovale in heart, apparently adult. The foramen is large. A glass tube with whalebone in it has been passed through the foramen so as to exhibit a very elongated cylindrical valve projecting into the left auricle and more than half an inch in extent from fixed to free edge. The ductus arteriosus is largely patent, allowing a $\frac{1}{4}$ -inch glass tube to pass through it from the pulmonary artery into the arch of the aorta before that vessel has arched over to the left. Half an inch intervenes between the origin of the ductus arteriosus from the pulmonary artery to the commencement of the right and left

pulmonaries; and the right pulmonary artery is not half the size of the left. The aorta before being joined by the ductus arteriosus gives off only one branch after the coronary arteries, and this branch is cut short. This is an old specimen found on the shelves and without record.

766. Eyeball of Porpoise. Antero-posterior section, showing sclerotic thick behind, thin in front, and containing considerable trunks of blood vessels; also retina with smooth ora serrata, broad ciliary processes, circular pupil, and spherical lens.

767. Porpoise eyeball, circular section.

768. Portion of base of skull and vertebral column of Acanthias. Showing continuation of sheath of notochord forward to trabeculae; also some interspinous cartilages.

769. Sucker from roof of skull of Echeneis remora.

770. Female urethra and neck of bladder. On one side the anterior rugosity of the vagina is slit up, as is also the whole length of the urethra, showing the thickenings of muscular and vascular structures between the urethra and vaginal surface, also the comparative narrowings of the outlet of the urethra and glandular openings within the outlet. On the other side is seen the trigone affected apparently with an eruption and showing the oblique openings of the ureters, also a strong coat of muscular fibres continued from round the vagina so as to embrace the urethra. There is also a longitudinal mesial slip of fibres calculated to shorten the urethra.

771. Clitoris, human. The glans and ventral portion of corpora cavernosa are separated by a transverse longitudinal section from the dorsal part of the corpora cavernosa.

772. Integument of full-time foetus, with ectopia viscerum. The sac which contained the escaped viscera having been placed in the large bag protruding on right side of abdomen, the vessels of the cord are spread separate in the walls of this bag. There is also another projection which is directed backwards from the lower end of the trunk and contained a large spina bifida, which is preserved in jar, 773. Skeleton, 785. Viscera, 786.

773. From the preceding case (772); portion of brain, together with the spinal cord and its membranes. A syringocele

expands at the lower end of the cord, and the wall of the sac is rough and thickened round the orifice leading into it. At the upper end of the specimen the floor of the fourth ventricle is seen to be enlarged, while the corpora quadrigemina appear to be normal. See also 785 and 786.

(Dry) **774. Horse-shoe kidney**, dried *in situ*. The two lateral parts have a pair of renal arteries coming off in the normal position, the right one dividing after a course of $\frac{3}{4}$ -inch, the left dividing immediately. In addition a mesial artery comes off at the bifurcation of the aorta opposite the fourth lumbar vertebra and divides into a right and left branch to the lower ends of the almost completely separated right and left kidney. Query, Has this been the cause of the union of the two kidneys?

(Dry) **775. Bones of left fore-foot of Pig**, with five metacarpal bones and six toes. The third, fourth and fifth digits are normal, but the os magnum does not come so far underneath the scaphoid as is normal, and instead of having only one other carpal bone to its radial side it has two, the one next it being little less broad than itself, while that which is beyond is little more developed than the normal single bone, and supports a metatarsal bone and three digits all of similar development to the normal radial smaller toe (corresponding to the index of the human subject). The digit supported by the carpal bone between this and the os magnum is but slightly smaller than the two normal well developed toes to its ulnar side, and at its distal extremity bears two digits, the ulnar digit considerably smaller than the radial, and both consisting of three phalanges.

776. Vitreous humour, lens and transparent membranes of Ox eye.

777. Rectum everted, from the same female subject as 757. The bones of this subject were preserved, and when macerated and dried presented characters of an old person—perhaps 70 years—unusually healthy and unaltered in form, save the feet, which had been cramped apparently by tight boots. Specimen shows at the lower part the columns of Morgagni and the recesses between them, as also the line of contact of the intruded continuation of the epidermis and the true mucous membrane above the grasp of the deep sphincter. Above this the dilatation below and behind the pouch of Douglas with its greater convexity directed backwards. This is separated from the loose part above (the part which has a mesorectum) by a distinct valve of Houston traceable almost all round. The solitary glands are exceedingly numerous, especially on the great dilatation.

(Dry) **778. Skeleton of *Echeneis remora*.**

(Dry) **779. Skeleton of *Exocetus volitans*.** Flying fish.

(Dry) **780. Skeleton of *Leuciscus rutilus*.** The roach.

(Dry) **781. Skeleton of *Scomber scombrus*.** The mackerel.

(Dry) **782. Skeleton of *Carduelis elegans*.** The goldfinch.

(Dry) **783. Skeleton of *Scolopax gallinago*.** The snipe.

(Dry) **784. Skeleton of *Sturnus vulgaris*.** The starling.

(Dry) **785. Skeleton of *Fœtus*,** with ectopia viscerum and spina bifida, of which the other preparations are Nos. 772, 773 and 786. In this preparation the skeleton and a number of muscles are dried. The skull and limbs are normal. The lumbar and sacral parts of the vertebral column show the alteration produced by the dropsical swelling of the cord which gave rise to the spina bifida. This has also pushed aside the ischial tuberosities at the same time that it has displaced the sacrum forwards and led to the glutei maximi muscles being thrown into one transversely continuous muscle crossing the middle line. In front, the pubic bones, though each completing the obturator foramen of its own side, fail to meet in the middle line. The cartilage of the body of the right pubic bone was united by strong fibrous tissues to the umbilicus. It will be understood from the next preparation, 786, that the symphysis remained open owing to a bladder-like expansion representing the colon, and to that hollow viscus the coccyx was united by a fibrous band. To save this band the coccyx and a portion from the ventral part of the lower sacral vertebra has been cut away to be exhibited in 786.

786. The viscera of the *Fœtus* from which Nos. 772, 773 and 785 have been prepared. Above and to the left are the tongue, trachea and œsophagus. The heart, lungs and arch of aorta are displayed, and above the heart the two innominate veins cut across are recognised by being tied with short white threads. Joining the left innominate, a vein, probably the left cardinal, comes up from below and is made to stand away from the other structures by a bristle passed along it. This vein received the blood from both kidneys and both lower limbs. The liver is hanging in a position similar to that which it occupied as it lay for the most part extruded from the abdominal cavity;

but the stomach and spleen are thrown to the left over the liver after removal of the lesser sac of the peritoneum. What looks like a pylorus is held forwards by a plate of glass and is seen to be separated by a short impervious band from the commencement of the intestine; and on further examination the common bile duct is seen entering at a point higher up. Therefore the impervious constricted band, being below the entrance of the gall-bladder, is really not higher than the lower part of the duodenum, while the apparent pylorus is duodenal in nature. Almost immediately below the impervious constriction the intestine is crossed by the umbilical vein, which falls into the left vena portæ, but has in continuity with its direction an elongated narrow ductus venosus in close connection with a much wider hepatic vein, and this joins with it to form the inferior vena cava. The latter has had no branches from either kidneys or lower limbs, but chiefly receives blood from the liver and from the placenta, and extends nearly $1\frac{1}{2}$ inches from liver to heart, no doubt in consequence of the displacement of the liver. At the position of the umbilicus the umbilical vein is united by a ring of white thread to the single hypogastric artery, which together with it formed the umbilical cord, the left hypogastric artery being absent, and the aorta receiving on the left side no blood save from the lower limb and pelvis.

The right kidney and adrenal are preserved in the relation which they occupied to the liver, and below them is seen a very large spigelian lobe which projected down a long way, as it does in many mammals. The left kidney and adrenal are placed in their natural relation to those of the right side, and between them there is laid open a large dilated structure which occupied the pelvis. No orifice either of genito-urinary or rectal character was detected on the integument. The dilated hollow structure or sac receives, as is seen, the intestine, which is partially unravelled and is probably eight inches long. Just where the intestine opens into the sac a change occurs suddenly in the mucous membrane and a small vermiform appendage is seen less than half an inch long. Into this the pen of a small feather has been thrust, cut square at the end. This shows us that the colon is represented entirely in the dilated sac. Another feather is made to project from a blind sac, which is more than half an inch in length and represents the allantoic part of the urinary bladder. The feather is distinguished by having a white line at the tip. Lower down than this and arranged to the right is a part which has projecting into it a prominence perforated at the tip, and through this an echidna spine has been placed which passes right through to where the sac has been detached from the perineum, thus exhibiting a natural tube, the urethra. Above

the urethral orifice there is seen in the sac a laterally extended spongy glandular-looking surface, and close above this are the two orifices of ureters removed some little distance from the orifice of the pouch which I regard as fundus of the bladder. Close to the cut edge of the sac, below the left ureter, the left ovary and Fallopian tube are seen. The right ovary and Fallopian tube were accidentally cut away in putting up the preparation. Several specimens of quite the same description have been recorded by Dr. Arthur Keith and by others to whom he refers; but the structures have been altogether misapprehended, and the existence of spina bifida, which has probably been the cause of the other malformations, has not been noted, so far as I know.

787. Lower jaw of a Salmon which had been taken in the Tay at Birnam, and was found cast aside in the snow at Christmas-time putrefying. A section is made through the symphysis to display the matted fibrous structure which gives the beak-like appearance in the foul fish.

788. Injected intestine and mesentery of Goat. Showing mesenteric glands and lacteals naturally injected with chyle. The beaded character of the fine afferent lacteals is distinctly seen, and it is notable that the efferent ducts from each gland are only one, two or three in number. A thread is put round two ducts from two glands, and these two ducts join with a third from another gland to make a single duct.

789. A section of liver, human, put up to show the empty sections of hepatic veins gaping in the hepatic tissue, and the sections of Glisson's capsule accompanying the portal veins and hepatic arteries. It is from the same subject as 790, 794, *b*, and 795.

790. A small part of the same liver, with its peritoneal covering raised from it to show the commencement of sub-peritoneal pathological deposit which goes on in some instances to make a thick leathery structure of considerable thickness.

791. Aortic aneurism occurring in the arch and dilating behind the branches of the arch. Death has occurred by the aneurism opening into the trachea, and a feather is placed in the opening.

792. A dissection of the labial glands in the human subject, exhibiting their great number and their disposition in four groups on each half of the upper and of the lower lip.

793. Human liver marked by creases of the diaphragm caused by tight lacing.

794. Viscera of Hag (*Myxene glutinosa*). Above is seen the muscular throat not dissected out; below this are seen, injected, five pairs of marsupibranchiate gills leading into tubes.

793, b. Dry gangrene of upper limb, allowed to separate without assistance.

794, b. Spleen of male subject, *æt.* 40 (circ.). He was a jockey, and was said to have poisoned himself with opium. The intestine was enormously large and contained only a little pulp. The spleen is small, without notches in anterior border, and shows at the upper end of the hilus a surface the size of a three-penny bit, the surface which I describe as constant or nearly so.

795. Section of liver of same subject as 794, b was taken from. It shows a remarkable deposit of subserous thickening, not so thick as I have sometimes seen, but spread in a curious pattern.

796. Integument of right limb of young Frog, with additional two-toed limb growing from outer side of knee. Dr. J. F. Gemmill.

797. Skeleton of hind limbs of the same Frog as 796, with additional leg coming off from right knee. The left side of the pelvis is fuller towards the pubis than the right, but is otherwise symmetrical. The right femur is incompletely double and almost symmetrical in its whole length. The additional leg bone is continuous with the outer half of the double femur, the two long tarsals beyond are joined together, and each has continued from it a metatarsal, the outer of the two ending in a bifurcated extremity without phalanges, while the inner metatarsal supports two series of phalanges placed close together, the outer consisting of a first and second, and the inner of first, second and third phalanx. Prepared, mounted and presented by Dr. J. F. Gemmill.

798. Brain of Rabbit, with the hemispheres, corpus callosum and fornix all folded forwards with as little injury as possible, so as to display corpora quadrigemina, optic thalami, and, partially outside the latter, the corpora striata. A small strip of choroid plexus has unfortunately broken from its connection and fallen on the pineal body and its crura. The central and lateral lobes of the cerebellum and the flocculi are all seen; the flocculi arising

each from the upper margin of the lateral slit-like projection of the floor of the fourth ventricle, while the inferior margin of that projection is free.

799. Pia mater of medulla oblongata, etc., with the choroid plexuses of the fourth ventricle, human. On the left side an injury has taken place in mounting, by which the choroid plexus on the left side has been torn from the thread which kept it in place. But the corresponding part on the right side is uninjured, and shows distinctly how the choroid plexus dips in from the middle line to the extremity of the lateral projection of the fourth ventricle along the peduncle of the flocculus. The two ascending parts of the plexuses adhered to the laminated tubercle, while this passed into the ventricle beneath the velum posticum.

800. Stomach, duodenum and liver of Terrapin. The stomach displays a series of five permanent rugæ running its whole length, ceasing abruptly at a circular margin at the pylorus, where the mucous membrane abruptly changes its character, and is no longer of a firm and smooth surface, but thrown into thin gauzy reticulations which have received the injection freely. The duodenum, after a course of $4\frac{1}{2}$ inches, is bound down to the liver by a narrow fold of peritoneum, by which the bile and pancreatic ducts pass to open into it at a depression which is seen about an inch beyond its bend, marked by better injection than the part around it. The pancreas is narrow and runs close to the duodenum back towards the stomach. The liver is almost divided into two, which are joined by an isthmus ventral to the exit of the hepatic vein. Ventral to this is a great circular fold of peritoneum almost surrounded by hepatic substance. But though the right and left hepatic lobes are continuous one with the other on the ventral edge of this circle, they are only united by a thin thread of substance about $\frac{1}{8}$ inch wide. The gall bladder is seen entirely imbedded in the interior of the right lobe of the liver, but the dissection failed to display the connections of the ducts.

801. Human kidney, moistened with glycerine, with the pelvis of the ureter breaking into three considerable separate divisions or necks of calyces before reaching the hylus.

802. Spinal cord of new-born Infant, with portions of column on each side, showing the course of the roots of nerves to their passage out through the dura mater; also the arachnoid; also a number of spinal ganglia; also the pia mater

injected; also the very long tapering of the lower end of the cord, which has already dwindled in the middle of the lumbar region, but gets still thinner till it reaches the level of the base of the sacrum. The anterior anastomotic artery of the cord is seen injected.

803. Human spinal cord *in situ*, front view. This specimen was put up temporarily under the care of Prof. Allen Thomson, but required cleaning, dissection and further preparation. It now exhibits the spinal cord ending in filum terminale opposite the lower border of the first lumbar vertebra; also the spinal ganglia and in the thoracic region the separation of trunk into anterior and posterior divisions.

804. The membranes of the spinal cord. The dura mater, arachnoid and pia mater, and the nerve roots are seen from behind. The substance of the cord has been macerated out. The wall of the pouch of arachnoid containing the cauda equina is held out by means of a glass rod.

(Dry) **805. Heart and great vessels of Goat**, showing specially the left vena azygos entering the heart by duct of Cuvier (the oblique vein of Marshall in human anatomy).

(Dry) **806. Two urinary calculi** extracted by me from the bladder of a patient in Galway. They are exposed in a tin box, to which is attached a detailed account of the case.

807 and 808. *Kidneys of a young subject, both healthy, one with two ureters.*

807. Right kidney, normal and healthy, seen from behind.

808. Left kidney with two ureters, seen from behind.

809. Human liver, adolescent. Hepatic artery injected with vermilion, hepatic veins with prussian blue. A horizontal section made so as to remove the dorsum of the whole of the right lobe shows over a considerable extent the centres of the lobules injected blue. Sections also are seen of empty tributaries of the hepatic vein gaping open, their walls closely adherent to the hepatic substance, and numerous sections and branches of the portal vein with Glisson's capsule white, and hepatic artery red. On the opposite side of the preparation the peritoneum is removed from large part of the under surface, so as to lay bare the fibrous capsule, and it is to be noted that the branches of the hepatic

artery are particularly numerous at the posterior surface, where it is uncovered by peritoneum, between the upper and lower fold of the coronary ligament.

810. Skeleton of Cyclopiæ Kitten. Left mandible has fallen to the bottom of the jar. This allows the bones of the base of the skull to be better seen. The vomer is largely developed, the maxillæ meet in front of it, the palatals lie one on each side of it.

811. Portion of multilocular ovarian cyst, injected with vermilion, showing an accumulation of small cysts in the wall of a large cyst. Removed by Prof. Murdoch Cameron.

812. Two ovaries with diseased Fallopian Tubes. In the upper specimen the left Fallopian tube is seen to be closed at its free extremity, and filled, especially in that part, with pus. In the lower specimen the right Fallopian tube was greatly distended with more fluid pus.

813. (Found undissected in an old stock jar) Hypertrophied prostate and muscular tissue of bladder, bearing evidence of effects of treatment. The prostate bears marks of many false passages, shown in section. Three abnormal cavities are seen, two of them opening into the prostate, one opening into the bladder. A strong transverse ridge lies, as is not uncommon in such cases, above the mouths of the ureters, and above this there are two rows of deep pits, which have much more the appearance of being produced by catheters than by spaces between muscular bundles.

814. (Found undissected in old stock jar) Prostate and portion of bladder and urethra. In the floor of prostatic urethra a mesial opening of considerable size is seen. It leads back into the tissue behind, and presents a deep split leading into it with healed surfaces. The bulbous part of the urethra is healthy, but the membranous part is contracted. Probably too large a catheter has been pushed through it, and made prostatic false passage.

Nos. 815, 816 and 817 are all from one specimen, exhibiting exaggerated growths of adenoid tissue in connection with the intestine—an obvious case of lymphadenoma, otherwise termed leucocytosis, Hodgkin's disease, and probably accompanied with leucocythæmia. The textures were found in a stock jar left when Dr. Allen Thomson resigned the chair. No history can be given of them.

815. A considerable portion of ileum, with enormously enlarged mesenteric glands, one of which is shown in section. Peyer's patches are seen in various places much thickened, and at one part near the lower end of this portion of intestine the lumen of the intestine is considerably obstructed by a tumour caused by thickening right round.

816. A separate portion of the ileum, showing thickened Peyer's patches.

817. The cæcum and ileo-colic valve of the same specimen. The opening into the colon from the ileum is almost occluded by a circular growth founded on the closed follicles, and in like manner the vermiform appendix is converted into a tumour, and into its lumen a feather has been pushed.

818. A shot lodged in the radius of a pheasant. The fragments of the broken bone had been kept separate by the ulna, and a complete circle of bone has been formed round the shot, which remains in the middle. Presented by Professor M'Kendrick.

819. Male skull, middle-aged, fractured by falling out of a window, on right parietal region.

820. Vitreous humours and lenses of two Ox eyeballs, prepared with soda carbonate and stained with methylene blue. The lenses are transparent and green, the vitreous humours have only a slight haze and are colourless. The ruptured anterior wall of the capsule of the lens is very slightly brown. The canal of Petit in the upper specimen has a white precipitate in its interior, and the back part of the lens of this same specimen has likewise altered to an opaque white pulp. The plications of the zonule are very distinct, exhibiting an appearance of linear structure belonging to the suspensory ligament.

821. Old unlabelled specimen, remounted. Abscess at fundus of bladder with small intestine adherent. Prostate enlarged, bladder much thickened, and thrown into pits. At the outlet of the bladder there are two symmetrical openings with membranous walls and fringed upper extremities placed symmetrically, and leading into the prostatic urethra. They are obviously a congenital peculiarity. Only one of them had been noted and brought into view by means of a glass rod sent through it. But its companion was perfectly obvious, and is now exhibited in like manner.

822. Old unlabelled specimen, remounted. Tumour of prostate. Blue rods are in the ureters, and a white rod shows the route of a perforation which has been made during life from the rectum into the trigone. The thick prostatic wall distinguishable from the lobulated tumour shows how Freyer's operation is possible. There is no mode at my disposal for finding out who originally made this most interesting specimen. But it is certainly not a Thomson preparation.

823. Brain and spinal cord of fœtus of fifth month, injected with carmine. Note the small size of the thoracic part of the cord compared with the cervical and lumbar enlargements which have each a horizontal sectional area from four to six times as great. The choroid plexus of the fourth ventricle on the right side is torn out from the flocculus so as to show the free edges of brain above and below a horizontal slit, which are the first rudiments of the flocculus. The upper parts of the hemispheres are removed, and the very large choroid plexuses of the lateral ventricles are seen.

(Dry in jar) **824. Intracapsular fracture of the right hip joint:** the articular head remaining in the acetabulum, a false joint has been manufactured between it and the fractured neck of the femur. But, as usual, the whole of the neck has disappeared posteriorly. Also a portion in front is projected forwards, and behind this there is a large flat surface between the two trochanters, and this moves on the head of the femur.

825. Chronic inflammation of knee joint, showing: 1st, Porcellaneous degeneration of exposed surfaces of patella and femur. The close-grained deposit of bone so named is remarkable for the circular curve on both surfaces, which replaces the faceted arrangement of the original cartilages, as is always the case in this method of repair, and for the vertical scores indicating the plane of movement, and caused no doubt by hard projections on one bone scoring the opposed bone. Apparently such projections have formed in the depth of the articular cartilage of the lower border of the patella and surface of the femur in front of the outer condyle. 2nd, Undisturbed cartilage over the femoral condyles without any indication of ulceration except at one part, but covered with a villous growth, short and scant over the part pressed on by the tibia in the erect posture, but long and thick posteriorly, and at the sides of the digital fossa. The one part of the cartilage ulcerated away is that which is normally pressed against by the seventh surface of the patella in complete flexion. The villi are precisely of the same character

as the still longer and thicker villi growing from parts of the synovial membrane, and a similar growth occurs along a line between two ridges of the denuded surface of the patella.

In a line with the outermost score of the patellar surface of the femur there is seen a little row of tubercles, apparently bony, growing through the cartilage, and in one instance piercing it completely.

(Dry in jar) **826. Portion of a diseased liver** from dissecting room. Outwardly this liver seemed quite healthy, the surface glossy and the edges sharp. But a vertical antero-posterior section through the right lobe discloses an incised-looking mass which, when fresh, had a tallow white appearance broken up into lobes. Under the microscope it appears to be composed of hepatic cells which have been necrosed.

827. Left ear of a sheep's head with three teeth depending from it, as also a lower lip and a nodule of bone representing an additional lower jaw. From the middle of this bony nodule a fibrous band proceeds, containing in it bony nodules of small size, and ending in a muscle which is at first symmetrical, and then spreads on the outer free margin of the developed left jaw of the sheep's head, partly over the angle and partly in a forward direction. The head, except so far as has been preserved in the preparation, was perfectly normal. On looking into the interior of the pinna the meatus is seen to be continued straight into the deepest part of the concha, which in the normal sheep is blind, and a passage passes straight inwards thence, in front of the stylo-hyoid or great hyal bone, and behind the tympanic bone, interrupted by no membrana tympani, and opens into the left side of the nasal part of the pharynx of the developed sheep by means of the Eustachian orifice. But in front of the tragus, in the position in which in a normal sheep the external meatus passes, there is a true meatus which passes into the tube of the tympanic bone. A red string is passed through the first opening, which is the pharynx of the parasitic jaw, and a blue string (continuous externally with the red) is passed through the true auditory meatus and the tube of the loosened tympanic bone. The tympanic bone has no bulla, the membrana tympani is quite imperfect, and there is no trace of auditory ossicles. Internal to this membrana tympani the blue string finds itself in the same passage as the red string, namely, that leading to the left auditory meatus. But it is to be noticed that there is no tympanic bulla, and in point of fact this external passage and middle ear must be considered as common to the developed sheep and to the parasite. The internal ear has not

been opened into; but the cerebral and cerebellar aspects of the petrons are normal and apparently belong altogether to the developed sheep.

828. Integument of head of a human foetus of fifth month, with two bodies. It is possessed of only one face, a large cranium, and behind, in the middle line, a combination of two ears, viz. the left ear of the right foetus and the right ear of the left foetus. Above this, about an inch, there is a mesial tegumental elevation, while another and smaller elevation is about quarter an inch above the united ears. These are (I have no doubt) vestiges, the upper of a cyclopic eye, the lower of a cyclopic nose (see Nos. 835, 855, 856).

829. Eye of Horse, cut open equatorially, tunica vasculosa injected. The horizontally elongated pupil is seen with fringed pigmented appendage to the free upper border of the iris, and a slighter growth of the same sort on the lower border. The ciliary processes are broader above than below, and the partial tapetum is best developed above the part of the choroid opposite the pupil, and receiving the rays from the ground. The optic pore is also seen with some small remains of the retina.

830. Eye of Horse. A somewhat similar specimen to 829: shows the tapetum better, and more of the retina hanging from the optic pore.

831. Eye of Horse. Everted tunica media, showing tapetum and ciliary processes.

832. Eye of Horse. Capsule of lens and the zonule of Zinn.

833. Eye of Horse. Lens within its capsule, and zonule of Zinn round about.

834. Eye of Horse. Cornea, with epithelium removed, and hanging from its margin the loosened ligamentum pectinatum, with remains of membrane of Descemet, and a bundle of fibres which are the circular fibres of the ciliary muscle.

(Dry) **835. The dried dura mater of the base of the skull of the double monstrosity,** the integuments of whose head are preserved in No. 828, and present a single conjunct face looking in one direction, while on the opposite side there are two ears with one meatus between. In the middle line of this specimen are seen—the upper part (cribriform plate) of the conjunct face—the region corresponding to the sella of

both the united heads and a symmetrical bone pointing in the opposite direction and narrowing to a linear continuation. On each side of this mesial structure is seen a separate fossa basis cranii and tentorium, so that the structure itself represents the adjacent great sphenoidal wings of the two embryos. Beneath the linear portion of this structure were several fine slips of muscle, probably muscles of the orbit pointing to the mark in the integument mentioned (828) as representing the site of a conjunct eye.

836. Human Eye, from a German Jew (?), with the sclerotic divided equatorially, and reflected forwards and backwards so as to exhibit the choroid and some of the ciliary nerves. There is scarcely any *membrana fusca*. A window is torn open in the choroid so as to show the ring of ciliary processes; and the flap of choroid reflected from this window shows the transparent membrane of Bruch.

837. From the same subject as 836. Has the fore part of the sclerotic separated almost entirely from the ciliary ligament so as to show the ciliary muscle with the ciliary nerves entering it, and on the anterior margin of the sclerotic the pigmented ring which formed the outer wall of the canal of Fontana.

838. Stomach, intestine and swimming bladder of *Argentina hebridica*. The stomach almost black, as was also the parietal wall of the abdominal cavity; the intestine, perfectly straight from beyond the two pyloric appendices, loses its pigment in the hinder half and is ringed from beyond the pigmented half to about half an inch from the vent. The ductless swimming bladder is densely silvery.

839. Skeleton of *Argentina hebridica* (the Hebridal smelt).

840. Pinna and external auditory meatus of new-born infant. The cylindrical cartilaginous portion of the meatus is continuous with an expanded membranous disc corresponding in extent with the tympanic ring against which it lay, forming the outer wall of a flat chamber external to the tympanic membrane and communicating at its upper part with the tubular meatus. It is in this disc that the osseous part of the wall of the meatus is afterwards developed in continuity with the annular attachment of the *membrana tympani*.

841. Brain of fœtus of seventh month. Sagittal section of right side. There has been considerable effusion into the

lateral ventricle, distending the anterior cornu and also the posterior, but more remarkably the great cornu, which at the inner side of its extremity, at the anterior edge of the transverse fissure, shows a communication, in the form of a circular opening, leading from the ventricle to the surface of the brain exactly in the position of one of the openings described by Luschka as of the same description as the "foramen of Magendie." It is not, however, an interruption of the continuity of the pia mater.

842. Pyloric end of stomach, with a portion of the transverse colon attached to it by the gastro-colic omentum, showing between stomach and colon a large gap in the anterior wall of the sac of the omentum. The entire absence of all trace of adhesions and the wideness of the foramen of Winslow, part of whose walls is preserved behind the pylorus, forbid the idea that there has been a rupture caused by pressure of fluid within the sac.

843. Injected tongue of *Otaria jubata* (the sea-lion). It is bifid like that of the earless seals. The posterior portion destitute of proper lingual papillæ and corresponding to the part behind the V furrow and foramen cæcum in man is wide, prolonged forwards in front of the fauces and marked by a deep longitudinal furrow which is absent further forwards; but it has a few scattered wart-like papillæ, especially posteriorly, between the tonsils. The tonsils are distinct and partially covered by a crescentic fold of mucous membrane in front.

844. Hyoid apparatus and larynx of *Otaria jubata*, from the same individual as 843. The structures are much more differentiated from the ordinary type than in the true seals; and when it is considered that the eared seals preserve the pinna which has disappeared in the true seals, an instance will be seen of variation in two different sets of structures proceeding at different rates of rapidity in different genera of one tribe. In the true seals there is no approach to the cetacian elongation of epiglottis and cornicula laryngis, but there is a distinct tendency to such elongation in this specimen (compare with larynx of seal, 551, and with larynx of porpoise, 238). A pair of large lingual epiglottidean muscles are seen, one of them is partially dissected away. These are the muscles described by Dr. M'Intyre in the human subject, as mentioned in *Human Anatomy, Cleland and Mackay*. In the porpoise (238) the same muscles are seen much more distinctly attached to the hyoid, but probably also connected with the tongue. The thyroid cartilage is completely divided into two lateral cartilages united by strong ligament, while in the seal the halves are united by a narrow isthmus, and

in the porpoise there is a mesial shield-like part united on each side by an isthmus to the lateral dilatations, while the cricoid is split in the middle line ventrally. An enormous space intervenes between the cricoid and the interthyroid ligament, the space being filled with weak thyrohyoid membrane capable of distention. This membrane has been divided, and on looking into the interior there is seen a wide cavity without vocal cords, which presents in its dorsal wall a circular aperture into a pouch with membranous walls more than half an inch in diameter. This pouch rests dorsally on a remarkable flat bilobate projection forwards from the proserial border of the cricoid. This pouch lies between two muscles, the retroserial muscle being the arytenoideus, while the proserially situated muscle covered the whole back of each arytenoid cartilage, and on the right side has been entirely removed. On the left side a portion of it has been left to show its fibres gathering together to a tendon proserial to the neck of the pouch and to two rounded tuberosities of the inner angles of the bases of the huge arytenoids. The summits of the arytenoids are largely developed and folded over to make a jug-mouth guarded by a rim of yellow cartilage, but not adding to the cornicular form. The epiglottis is thick toward the extremity, which is supported on an elongated neck.

845. *Alcyonium digitatum*, with a number of the polyps fully extended. On one side a section exhibits the tubular structure.

846. Viscera of Mackerel. This preparation supplements 13. It shows, in addition, the fibrous septum which separates the kidney from the abdominal cavity, and dorsal to this, while the renal substance has been removed except at the hinder end, there is seen the firm light-coloured mesial rod already exhibited in the porbeagle shark. This structure has been shown by Dr. Gemmill to exhibit tubular structures not unlike renal. I have no doubt whatever that it corresponds morphologically (and probably also physiologically) to the adrenals of mammals. In this specimen as well as in 13 the elongated and remarkable gall-bladder is preserved.

847. Pituitary body of Horse. The section shows the difference in structure of the anterior and posterior parts.

(Dry) **848. Left hind leg and foot of Cat,** showing, by means of a bristle passed through, the loop of Retzius passing round the tendon of the extensor longus digitorum, and attached at both ends to the os calcis, external to the head of the astragalus.

(Dry) **849. Sterno-mastoid muscles of Hyæna vulgaris**, united in the middle line for a long way in front of the sternum.

(Dry) **850. Splenius capitis of Hyæna**, right side, forming two perfectly distinct slips, the outer of which, attached tendinously to the skull, presents a short belly which lay on the lateral margin of the atlas and is separated behind by a tendon from the rest of the muscular substance of the same band or slip.

(Dry) **851. Tendons and ligaments of fore limb of Sheep.**

(Dry) **852. Tendons and ligaments of hind foot of Sheep.** Specially showing the movements of the astragalus, and the crossed arrangement of the fibres of the external and internal ligament of the ankle. The astragalus moves extensively on the calcaneum in flexion and extension. This joint and the ankle move in harmony. The details of the action of the lateral ligaments of the ankle on the calcaneum in flexion and extension can be studied on this specimen.

853. Tendons and ligaments of hind limb of Hare. Foot in duplicate.

854. Tendon and ligament of fore limb of Hare.

855 and 856. Specimens from same double monster as 828 and 835.

(Moist, open) **855. Skeleton and muscles of above mentioned Double Monster.** The calvarium and brain are lost. Normal face formed by conjunction of right and left sides of right and left embryos respectively. Spinal columns distinct. Two conjunct sterna, one in front, the other behind, complete a common thoracic cavity. Upper and lower limbs normal. The bodies were completely separate below the single umbilicus. The peculiarities are in the base of the skull. The posterior surface of the body of the otherwise normal sphenoid articulates with the basilar processes of two complete and normal occipitals, each with a normal petromastoid on each side. Thus the left petromastoid of the right embryo and the right petromastoid of the left embryo lie side by side, only a narrow interval being left between them in the mesial plain of the double monster. In this interval there is an indefinite-looking elongated triangle of osseous substance representative of sphenoidal wings and ethmoid structures which should have lain between them, belonging to the two embryos respectively; while a concrecent

squamous bone lies over the base of the triangle mentioned and faces backward, with a lower edge behind, forming the roof of a concrescent external auditory meatus common to both embryos. Within the concrescent tympanum into which the meatus led, there was observed an ossicle somewhat X shaped, the lower and longer limbs of which were manubria of a conjunct malleus; but unfortunately the ossicle has not been preserved.

856. The viscera of the same monstrosity exhibit various peculiarities which are more or less peculiar to this particular specimen. The two embryos deviate in various particulars from the perfect symmetry exhibited superficially and throughout the muscular and osseous systems. The pharynx is symmetrical and has coming off from it two quite similar larynges, and from each larynx trachea and lungs come off, the two sets nearly symmetrical, but those of the left embryo a little larger than those of the right embryo. A well developed tongue projects forwards between the larynges and is conjunct in formation, belonging equally to each of the two embryos. But, from its base there passes backwards, to be attached somewhat more broadly behind, another muscular mass cylindrically surrounded by mucous membrane and obviously an imperfect conjunct tongue dorsally correspondent with the better developed tongue belonging to the jaws of the conjunct face. The œsophagus is symmetrical and extends down to a symmetrical stomach with a right and a left sinus magnus equally developed, similar to that which is seen in specimen 735 (Monstrous Kitten), but having two spleens connected with it, one opposite each sinus magnus. The stomach is continuous with the well developed intestine of the right embryo; while on turning to the left embryo, we trace upwards from the pelvis a colon, cæcum and vermiform appendix, as in the right embryo, but find the small intestine much less elongated, and ending abruptly above in a blind extremity, obviously torn, during development, away from the part of the canal common to both embryos, very likely at the opening of the hepatic duct.

There is one principal liver which lay in the part of the abdomen common to the two embryos, its dorsum occupying the whole breadth, and pierced in the middle by the umbilical vein. This vein communicated by a direct passage with the inferior vena cava of the left embryo, and thus the blood had been led into the right auricle of the well-developed heart of the left embryo, whence it had passed apparently by the usual foetal route to the upper and lower parts of the body successively. The heart of the right embryo is not half the size of the heart of the left embryo, but the aorta in its abdominal part is as large as

that of the other embryo. Unhappily the blood-vessels were so injured before examination that the course of the circulation could not be followed out. But the aortæ of the two embryos communicate broadly near their origins. On the inferior vena cava of the right embryo, there is placed an independent liver of small size, about two-thirds of an inch in length and half an inch in width, without gall-bladder. No communication was made out between it and the intestine. The large liver has a gall-bladder, and its ductus communis choledochus opened into the intestine about half an inch below the stomach, but it broke across and is seen hanging loose. Each embryo has the kidneys, adrenals and genito-urinary organs normal, with a hypogastric artery on each side of the urinary bladder.

857-860. *Cyclopiæ Lamb.*

(Dry in jar) **857. Integument of head of Cyclopiæ Lamb** born at full time. The proboscis has a single nasal aperture at its extremity. The opening for the eye is large, and beneath it there is a distance of more than an inch to the upper lip, beyond which the lower lip protrudes. (See next three specimens.)

858. Jaws, unroofed cranium, eye and brain of Cyclopiæ Lamb. The teeth of the lower jaw are in their place, those of the upper jaw are preserved in 859. The eyeball is cut open from above, and is seen to have not only two corneæ and irides, but also two lenses. There is only one optic nerve and apparently no retina. The cerebral hemispheres are represented by one mesial smooth-surfaced growth about $\frac{3}{4}$ inch in length and the same in breadth. Beneath this hemisphere there is a surface of contact with the velum interpositum leading forwards to a primitive foramen of Monro or fissure of entrance of the choroid plexus into the lateral ventricles. Beneath the position of the velum interpositum are the corpora quadrigemina rather flattened as if by pressure of water between them and the concrescent hemisphere. But there is every evidence that the thalamocephalic dropsy common to cyclopiæ has in this instance burst early into the subdural space and thus narrowed the hemisphere and pressed the corpora quadrigemina backwards instead of downwards. The cord and cerebellum are normal.

859. Tongue, pharynx and larynx of same Cyclopiæ Lamb. The pharynx is blind above the soft palate. Obviously, the eyeball having been above and behind the upper jaw, and the nasal cavity having the connections seen in the next specimen, there could not be any nasal fossæ.

860. From still the same specimen of Cyclopia in the Lamb. Shows the greater part of the conerescent frontal bones. The cartilaginous proboscis is cut into from above, and the greater part of one nasal bone removed. The nasal fossa is seen to form an elongated tube reaching back under the nasal bones, united ventrally in its whole length and ending in front in a single opening. The tube is lined with mucous membrane, and along its floor presents an elongated stiff body, apparently representing a pair of bones of the turbinate series.

861. Double-headed Kitten. The duplicity is confined to parts further forwards than (or proserial to) the occipital and the petromastoid. There are two noses, two palates, and two lower jaws. The left and right halves of the right and left mandibles respectively are only developed anteriorly and are united posteriorly, their junction lying between the two tips of a tongue, which is double in front and single at the root, with a single larynx behind it. Each nose is complete in front, with nasal cartilages, a pair of nostrils and a pair of intermaxillaries. The superior maxillaries of the right side of the right palate and the left side of the left palate have the palate plate normally complete, their mesial edges lying in the axes of the two palates, at right angles one to the other, while the gap between is bridged across by a strong osseous element, consisting of two maxillaries, a left one to the right side and a right maxillary to the left of the gap, and probably two malars, all, however, combined in one osseous mass, making a floor for the front of a pseudo-orbit containing a pseudo-cyclopid eye. I use the words pseudo-orbit and pseudo-cyclopid to denote that neither structure consists of structures of one head, but of the outer sides of two adjacent heads. Thus the pseudo-orbit is bounded on each side by a nose, and the distinctly duplex eye contained in it is a concrescence of the adjacent left eye of the right nose and the right eye of the left nose. The duplex eye looks forwards, and the remaining normal eyes look directly outwards. The brain of this specimen was decomposed and undissectible.

(Dry jar) **862. Puppy with additional limbs and tail appended in front**—skinned and displayed. From opposite the proserial end of the sternum there springs a conerescent fore limb presenting a thick symmetrical humerus, from the distal extremity of which there are continued two diverging forearms and paws. There is little muscular development and no trace of scapula in connection with this duplex limb. A thin thread passes forwards in connection with it under cover of the sterno-mastoid muscle to the head behind the right ear. Removed from this additional

fore limb by the whole length of the sternum and part of the middle line of the abdominal wall there is an appended structure consisting of pelvis, tail and pair of hind limbs, with a rectum passing into the pelvis. The rectum is fully developed and furnished with a pair of anal glands. No trace of reproductive apparatus was connected with these additional parts, but a body like a single kidney surmounted the pelvis. The tail terminated abruptly at the sacral end, and was only connected with the dwarfed pelvic bones by means of fibres of some length. The rectum of the appended parts was continued into colon, cæcum and small intestine; and this last became united after a considerable length with the small intestine proper to the developed puppy.

863. Pia Mater from medulla oblongata, pons Varolii, base of brain and velum interpositum, human, showing connections of velum interpositum, pineal body, &c.

864. Left hemisphere and olfactory bulb of Horse. The olfactory bulb is laid open, and the communication between its cavity and the front of the lateral ventricle is exhibited by means of a piece of blue glass rod passed through it, and filling up the opening. The left corpus striatum is seen, and its relation to the part of the base internal to the olfactory tract—demonstrating that part to be correspondent with the gyri operi and region of locus perforatus anticus of man.

865. Corpora striata, fornix and left olfactory bulb of Horse. The communication between the ventricle of the olfactory bulb and the lateral ventricle is shown by means of a bristle. The fornix is divided, the forepart being left intact, while the body and posterior crura, cut separate right and left and from the front, extend to the foot of the opened great cornu of the lateral ventricle.

866. Corpora quadrigemina, pons, medulla oblongata, crura cerebri and part of optic thalami of Horse. The arteries are injected and present a curious system of anastomosis between the crura cerebri. The pituitary body and pineal gland, the anterior half of the valve of Vieussens and the floor of the fourth ventricle are also seen.

867. Part of brain of Horse, including the cerebellum, from which the pons and medulla oblongata have been removed, leaving the choroid plexus of the fourth ventricle *in situ*, showing the approach of its right and left side to the middle line behind, and its lateral extension in the position which was occupied by the

flocculus; also the roof of the fourth ventricle with a prominence in the middle line formed by the anterior mesial laminæ of the cerebellum pressing downwards on the valve of Vieussens which conceals it.

868. Viscera of Stork. Tongue, pharynx, &c., hang over on one side. Trachea, inferior larynx, œsophagus, lungs and liver all seen *in situ*. Two thymus glands and heart all in position. The stomach is turned aside from under the liver in order to show the comparatively weak musculature of the gizzard and the light glandular character of the proventriculus. The epithelium and contents of the gizzard are preserved in jar 472.

869. Male Zebra. Bladder, prostate and root of penis. At the neck of the bladder the urethra is enveloped in a strong muscular coat in the region of the true prostate, which is swollen out apparently mostly by muscular substance, which is continued in the form of circular fibres for more than an inch. Then come a pair of glands covered with muscular coats, and beyond this the urethra is continued between the crura of the penis. The most interesting part of the preparation is on the dorsal aspect, where the two vasa deferentia are seen with their openings into the urethra distended with glass rod. Traced upwards they have an enormous musculature for three inches, thinning down an inch away from the urethral opening as well as at the other end. Between them there is a tubular structure, the prostatic sinus, between 4 and 5 inches long, ending in a blind pouch lying in a fibrous band stretching between the two. The opening of this tube into the urethra could not be made out.

870. Larynx, tonsils and root of tongue of Zebra. The tongue, very fully injected, shows a smooth dorsum, a pair of large circumvallate papillæ, not half the size of those of the horse, and distinct foliation at the sides. The tonsils are elongated from before backwards, and are studded with openings. The epiglottis and the large cornicula laryngis are grasped by the prominent posterior pillars of the fauces in such a manner as to make the opening of the glottis continuous in position with the posterior nares, enabling the animal to breathe freely through the nose. The thyroid body is kept on the right side, a flattish circular body tapering in front to a long narrow isthmus which connected it with the part on the left side.

871. Right testis of Zebra. The globus inferior of the epididymis is large, the globus superior very small, leaving little room for coni vasculosi. The tunica albuginea is removed from

the outer side so as to expose the lobules of tubuli seminiferi, which seem atrophied. The arteries on the inner side are seen through the tunica albuginea coursing in zigzag fashion from behind forwards, as in the horse. The whole organ is minute for the size of the animal, whose skeleton is preserved in the museum.

872. Lower half of a highly platycnemic left tibia found by Sir Herbert E. Maxwell in St. Medan's cave in making excavations.

873. Human embryo, 10 weeks old, upper limbs removed. Shows centres of ossification of head, ribs and lower limbs; column not begun to ossify, nor feet.

874. Lower jaw of fœtus of five months, with malleus attached by processus gracilis and remains of Meckel's cartilage.

875. Abnormality of Heart. This specimen was preserved by Dr. Allen Thomson, who also published an account of it. It became necessary to remount it and try to display the structure more completely. Besides open foramen ovale, it presents an interventricular communication below the aortic valve.

The specimen is hung by the aorta. Close to the aorta is seen the pulmonary artery laid open longitudinally from its commencement, which does not seem to have been guarded by a properly developed valve, but to have been greatly contracted at its commencement, and never to have attained anything like the proper dimensions. Below it, as well as below the aortic opening, there is a great recess with a prominent lower margin; and by carefully looking in certain positions there is easily seen an opening from the bottom of the recess downward into the left ventricle, but concealed when looked for from the left ventricle, by the right cusp of the mitral valve. The two ventricles are each laid open with its corresponding auricle by a cut carried through the auriculo-ventricular ring. The entrances of the pulmonary veins and whatever posterior wall the left auricle presented between them have unfortunately not been preserved. (For further details see Dr. Allen Thomson's *Memoir*; also Dr. Newman's paper in *Glasgow Medical Journal*.)

876. Portion of spinal cord of Horse, showing characters of origin of roots of nerves and of spinal ganglia; also on one side an attachment of the ligamentum denticulatum to the dura mater.

877. Ovarian cyst, presenting in the interior two teeth like incisors, and near them a tuft of substance presenting alveoli surrounded by papillæ. When the specimen was fresh, a short black hair projected from each alveolus, but these have evidently been mistaken by the dissectors for impurities and been carefully removed. Above and behind, the fallopian tube is seen winding, thickened and hypertrophied at the fringed extremity. The unaffected part of the ovary and its round ligament are also seen. Preserved from the dissecting room by Dr. Hutton.

878. Portion of intestine of a large Fish, with the mucous membrane covered with specimens of echinorhynchus, some of them an inch in length. Specimen presented by Mr. M'Laren.

879. Sternum, clavicles and costal cartilages of a fœtus of 3 months. It requires to be studied with a lens, and shows some curious things, but does not settle the origin of the sternum. Preserved in turpentine. Notice the large size and letter S curvature of the clavicles.

(Dry on card) **880. Bones of base of skull of Kitten**, showing in linear series basioccipital, post-sphenoid, pre-sphenoid, vomer, and mesial palatine processes of intermaxillaries; and at the sides the large tympanic rings in position.

(Dry on card) **881. Skeleton of Pilchard.**

(Dry) **882. Skeleton of Halibut head.**

(Dry on card) **883. Part of vertebral column of Herring**, showing the continuous elastic ligament which lies within the neural canal, above the spinal cord, and is homologous with the ligamenta subflava; also the upturned caudal extremity of the notochord.

(Dry on card) **884. Two specimens of a not uncommon deformity of the vertebral column in the Haddock.** It is known as Lordfish, and has been described by some under the name of scoliosis. It occurs also in the cod. It consists essentially in compression serially of a number of vertebrae.

(On card) **885. Various bones of the skull of the Pike**, also dried cartilaginous part of the skull. Various of the bones named.

(On stand) **886. Skeleton of Cod's head, shoulders and pelvis.** Articulated by G. C. Murray.

887. Larynx, tongue and tonsil of Chimpanzee. Larynx very similar to the human, but the cornicula laryngis much more prominent, and the edges of the aryteno-epiglottidean folds prominent, thin and membranous. Also the great cornua of the hyoid articulated at their extremities directly to cartilaginous prolongations of the superior cornua of the thyroid cartilage, while the fore edge of this cartilage glides by means of a large bursa on the inferior surface of the body of the hyoid. The left tonsil is preserved and well developed. The dorsum of the tongue has the filiform papillæ arranged in ridges in letter **V** order from the letter **V** line forwards; and at the sides these ridges and the furrows between are very distinct, especially in the basal part, where for half an inch on each side the arrangement constitutes a collection of foliate papillæ. The fungiform papillæ are scattered like those of the human subject. The circumvallate papillæ are arranged in form of a cross, presenting two large papillæ placed one on each side half an inch from the middle line, and in the mesial plane a rather small papilla, or rather pair of conjoined papillæ, one larger than the other. In front of this, in the middle line, is a series of five very small papillæ, while behind, in a line with them, are two more papillæ, the foremost of which somewhat approaches in size to the two large lateral; and between this latter and the papillæ in front of it, there is a depression which may be the foramen cæcum of the human subject. In the hinder part of the distance between the **V** line and the epiglottis, there are elongated papillæ or rather villi in numbers.

888. The fore part of a Lamprey, dissected on the dorsal surface, so as to show the brain and part of the spinal cord. The hemisphere lobes or prosencephalon form two spherical bodies, and behind them is an elongated body overlying the optic lobes, and seen to be the cerebellum elongated both forwards and backwards, but most considerably forwards, while beneath and behind it is the fourth ventricle and medulla oblongata. At each side of the medulla oblongata the internal ear is laid open and seen to be divided into an anterior and posterior part. In the middle line in front of the brain the olfactory sac is laid open, and in a transverse line with it are the eyeballs. The basal shield on which the suctorial apparatus moves is laid bare in front of this.

889. Right kidney supplied by five separate branches of the Aorta. Though the highest supplies also the suprarenal body, the two next are larger and enter the hilus normally, the upper of the two bifurcating at some distance from the

kidney. The lower two come off, one immediately above the common iliac, the other half an inch higher up, and reach the kidney, one at the lower extremity, the other immediately below the dilated commencement of the ureter, and both of these arteries pass in their course behind the ureter and the spermatic artery, but in front of the inferior vena cava. Prepared by Dr. G. M. Gray, and described by him in the *Anatomischer Anzeiger*, 1906.

890. Hydrocephalic Child at birth with cystic tumour at back of neck, which contained a sac of arachnoid, protruded through an opening below the external occipital protuberance. (See 891 and 892.)

(Dry) **891.** Dried skull of specimen 890, showing hydrocephalic expansion of roof, complete separation of the right from the left half of the bone, behind the foramen magnum, and a perforation about $\frac{2}{3}$ inch long and $\frac{1}{3}$ inch broad, by which the arachnoid had protruded. The occipital is surmounted by a group of ossa triquetra in the neighbourhood of the middle line.

892. Brain from specimen 890 and 891. Brain distended with dropsy, which had escaped into the fourth ventricle and protruded the arachnoid behind that ventricle in the form of a sac, which bulged out through an opening in the occipital bone, and formed a tumour on the back of the neck. (See 890 and 891.)

The hemispheres show great alteration of the distribution of convolutions and sulci, partly explicable by trunks of vessels having resisted expansion. The fore parts of the hemispheres, especially the right, have given way and been destroyed. Note also on the base considerable thickening in front of the optic commissure.

893. Brain of Porpoise, imperfectly dissected. Above are hung the roof parts of the hemispheres, cut off together, along with a few fibres of the corpus callosum. Below is hung the rest of the brain, showing the ventricular surface of the corpus striatum and optic thalamus and the anterior lobes of the corpora quadrigemina, as also the descending cornu of the lateral ventricle. The posterior elevations of the corpora quadrigemina have come separate and slipped down. The posterior border of the corpus callosum is left uniting the two hemispheres, and a mesial portion of the cerebellum has been removed to bring into view the broad floor of the fourth ventricle. Looking at the other side of the jar one sees the great development of the medulla oblongata, and the extraordinary flocculus.

894. Lengthening and consequent bending of the internal carotid arteries resulting from violent action of the heart. (Dr. G. M. Gray.)

895. Eye of Ox. Equatorial cut made through the choroid and retina. Shows the edge of the developed part of the retina (ora serrata of human subject), at the outer edge of the ciliary processes.

896. Eye of Ox. The crystalline lens is hung by a thread; the transparent structures with the retina in position on the hyaloid membrane have fallen to the bottom of the jar by the anterior wall of the capsule of the lens having given way.

897. Human eye. Above is the back part of the sclerotic with the membrana fusca removed and with the retina suspended by its attachment at the optic pore. Within the retina the vitreous humour is left, while beyond the ora serrata the pigmented epithelium of the zonule of Zinn is seen, and the lens within its capsule. Hanging lower down, the foreparts of the outer and middle coats of the eye are seen, showing the ring of projecting ciliary processes; outside it the white circle corresponding with the situation of the zonule of Zinn; and encircled by it the back of the iris with the pigmented epithelium partly covering it and partly removed.

898. Multiple myomata (fibroma) of uterus. (Dr. Samuel Cameron.) The uterus is cut open in its whole length. Its inner surface recognisable by its comparative smoothness, from the torn muscular tissue.

899. Curious unicornute uterus of Sheep. Uterus consists of a cervix which was very tightly closed, and has been slit open in its whole length, and of a right cornu, which was distended with clear fluid. The right ovary and Fallopian tube are seen normal. It was impossible to tell from the way in which the specimen had been removed from the body whether the left ovary had been normal or not. The pigment has disappeared from some of the cotyledons, as in pregnancy. A portion of the bladder is retained, with bristles in the ureters.

900. Viscera of Lacerta ocellata. On the dorsal aspect of the preparation, the long bifid tongue (somewhat dried) is seen projecting from its pouch of origin nearly half an inch in front of the glottis; and on the ventral aspect of the preparation are seen the two retractor muscles of the tongue, the right one divided and the left one intact, attached behind to the great or posterior

cornu of the hyoid. The arrangement of hyoid elements is seen; the body of the bone is distinct, and two osseous elements pass forwards on each side of it, the small cornua of human anatomy, and, as in hoofed mammals, articulate with an osseous element, ceratohyal, corresponding with our stylohyoid ligament, but loose at the dorsal end like that of a bird. The trachea is projected forwards beyond the hyoid a long way, and from the front of the basihyal or body of the hyoid there projects forwards a muscle answering to the human glossohyal, but which has nothing to do with the tongue. The two main bronchi are seen to be elongated in this species, and each as it enters the lung divides into an anterior and posterior division; and in the right lung (which has been dried) these divisions continue to exhibit regular linear cartilages. The elongated stomach is continued straight back in line with the deeply pigmented throat, and in the lower part of its extent has two silvery tendinous bands, one in front and one behind, corresponding with the anterior and posterior tendons in crocodiles and birds. At its posterior end it makes a sudden bend to the pylorus. Looking at the back of the preparation, within an inch of the pylorus is seen the pancreas; and, opening along with it, a long hepatic duct which comes from a gall-bladder under the liver but is not displayed. The lie of the heart to the liver is similar to the disposition of parts in birds, the right and left lobes of the liver rising up on each side of it. From the dorsal aspect the convolutions of the comparatively short small intestines can be followed, while lower down is seen the very short and wide great intestine beginning with a very slight cæcal dilatation which is unfortunately partially hidden by a loop of small intestine hanging down over it. At the lower end of the preparation is the cloaca, with the ureters of the short kidneys opening into it, and also the two oviducts which taper and become slender as they proceed onwards dorsal to the roots of the lungs. The ovaries are small, each attached by a ligament to the inner side of the corresponding kidney.

901. Injected pancreas, duodenum and pylorus of a child some years old. It is seen that in this instance the valvulæ conniventes do not make their appearance till close to the termination of the first or horizontal part of the duodenum. The main outlet of the duct of Wirsung opens, as is most usual, along with the common bile-duct, but the depression into which the two ducts open, instead of being shallow, is deep and tubular, about quarter an inch in depth. A feather is inserted into the bile-duct and a bristle into the pancreatic duct. Another duct of the pancreas opens by itself nearly an inch nearer the pylorus,

and was traced into communication with the main duct which is laid bare from behind.

902. The integuments of a case of sympodium in a full grown hydrocephalic foetus. A tumour is seen to come off abruptly in the middle line of the prominence of the buttock. The nature of the tumour is not obvious from examination of this preparation, but it readily suggests that a pathological condition at this part has prevented the retroserial edges of the two feet of the embryo from being moved outwards from the middle line. This explanation accounts for the fifth toes of the two component feet of the compound foot lying side by side while the great toes are at the sides, and the compound sole is turned upwards.

903. Heart and lungs of Agouti, injected. The heart is exceedingly stout and massive. The right and left lung show from the sides of the preparation three lobes each, symmetrically correspondent. The fourth or sub-cardiac lobe of the right lung, so common in mammals, is also seen to be present, if the jar be placed at a high level, and the bases of the lungs be looked at from below.

904. Pleura, great vessels and pericardium of Hyæna, put up specially to show the special compartment of the right pleura for reception of the fourth lobe of the right lung. The pericardium is opened from the front, and the greater part of the ventricles of the heart removed. At the back of the preparation the right pleura is seen to fold round the back of the posterior vena cava, and form a sac for the fourth or post-cardiac lobe of the right lung, with the entrance bounded on the right by the posterior vena cava, and on the left by a development of the dorsal mediastinum in which the right and left pleura lie back to back, forming a membranous septum. The roof of the septum is formed in like manner by the right pleura and the dorsal part of the pericardium, and slopes ventrally to the central tendon of the diaphragm with which the pericardium is adherent at its extremity. The ventral part of the sac, in front of the vena cava, is partially distended with cotton-wool to display the omental character of the double fold of pleura and the appendices of adipose tissue contained in it. These are continuous with masses on the pericardium, some of them probably altered remains of the thyroid body.

(Dried) **905. Trachea, bronchial tubes and œsophagus of Hyæna crocuta.** The œsophagus diminishes rapidly in size after two-thirds of its course to the stomach. The left lung has

three lobes corresponding exactly with the three main lobes of the right lung, but there is a slight neck common to the bronchi for the two upper lobes, while the corresponding bronchi of the right lung have no neck in common. The bronchus for the fourth lobe of the right lung is seen coming off from the front of the main bronchus beyond the origins of the bronchi for the two upper lobes.

(Dried) **906. Labial glands and coronary arteries, human.**

907. Skeleton of double monstrosity of Pig. The body has two sterna, each belonging one half to each embryo, and receiving costal cartilages from each, so as to unite the two thoraxes into one common thorax with two vertebral columns and two complete sets of ribs. The bodies below the umbilicus are distinct, and all the limbs are normal, as also are the cervical vertebræ. But the heads are conjoint, forming a janiceps. One face compounded from the two embryos looks forwards between them, and is complete with the exception that the maxillaries, intermaxillaries and nasals on each side are run into one bone not sufficiently projected forwards. The other face, looking backwards, is devoid of lower jaw, and has one mesial composite nasal, while the maxillaries are badly developed and turned downwards, forming with the nasal cartilages a tubular snout. The parietals of the anterior skull are well developed. Those of the posterior skull are short, with the squamous bones enlarged and supplementing the parietals at the sides. The two foramina magna were (when fresh) normal below, and seen to have each a composite basilar and two normal lateral occipitals bounding them. The anterior skull has the tympanic rings normal, while the posterior skull had none. Other details have become unrecognisable in the process of drying.

This specimen has peculiar interest when compared with the human specimen 260, in which the two skulls are somewhat similarly united, but only one body has been developed, and in which an occipital bone is preserved at each end of the double skull, each original head having belonged to a distinct embryo.

(Dry on card) **908. Skeleton of thorax of infant 2 days old.** Prepared by Dr. G. H. Edington, and described and figured by him in *Jour. Anat. and Phys.* in memoir entitled "Multiple Malformations (genito-urinary and skeletal) occurring on one side of the body in a case of Atresia Ani." A plate illustrating the memoir is attached to the specimen, viz. Plate LIII., July 1904.

(Dry in jar) **909. Tongue and hyoid arch of *Crocodilus biporcatus*.** The tongue has occupied the whole floor of the mouth, and has been attached all the way from root to tip: a portion of integument has been left under the tip to show that there is no free portion at the tip. On the surface about 20 depressions, apparently glandular, can be seen scattered over the middle part of the dorsum, but such are absent from the tip to about half way back to the fauces, and also in the faucial or posterior part. The hyoid arch consists of a great cartilaginous shield about 3×3 inches in extent, and of a pair of lateral hyal bones, curved and thick, which have been jointed to the skull. These correspond with the styloid processes, stylo-hyoid ligaments, and small hyoidal cornua of the human subject. Each lateral hyal presents a muscle inserted along its proserial edge, and arising from the cartilaginous shield in such a manner as to be capable of lessening the angle between the cartilage and bone.

The larynx has been cut away and put up as a separate specimen (see No. 914); but the rima glottidis is left attached to the mucous membrane of the root of the tongue, to show the position which it occupied relatively to the cartilaginous shield, and how the larynx was thus placed within the concavity of the shield.

(Dry) **910. I. Left ear of Lamb.** (a) Tympanic bone with stylohyal attached, membrana tympani, malleus and bulla tympani. (b) Petromastoid, showing cochlea, also head of stapes looking out of fenestra ovalis.

II. Petromastoid of Sheep (left), inner wall of tympanum with malleus and incus in position, and head of stapes looking out of fenestra ovalis.

(Dry) **911. Atlas and axis of Child one year old,** the axis bisected to show the separation, by a space, of the centrum from the odontoid process. The larger section shows epiphysial ossification between body of axis and odontoid process. The smaller section shows the apical centre of ossification of the odontoid process.

(Dry) **912. Atlas and axis of new-born Child.** The odontoid part larger than the centrum of the axis.

(Dry) **913. Atlas and axis of Tortoise.** The atlas has the inferior surface turned up, showing a pair of true inferior articular processes besides the surfaces present in the human subject. The true articular processes lay behind the second nerve. The axis shows the odontoid process distinct from the true body of

the axis; and surmounting the odontoid process is a spike of calcified notochord forming a pivot on which turns the occipital bone.

914. Larynx of Crocodile (from the same specimen as No. 909). Exhibits a pair of large muscles arising laterally from apparently both cricoid and thyroid cartilages, and united musculo-tendinously in the ventral middle line proserially, and by a long tendinous band more retroserially; while dorsally there is another pair of large muscles corresponding with the arytenoidei and posterior crico-arytenoidei of the human subject. These latter have been divided to the left of the dorsal middle line, so that the part thrown back to the right shows their narrow union by tendinous raphe in the middle line. The cricoid cartilage is laid bare dorsally, and is narrow there, but swells out at the sides, while proserially, surmounting it, is seen what appears to be a thyroid cartilage in two lateral parts. Compare with thyroid of Otaria, 844. Two broad bands of thickened fibrous tissue pass by the sides of the rima glottidis from the cricoid towards the thyroid cartilage.

915. Skeleton of Pike (*Esox lucius*). The flesh-bones are preserved. A long range of these extends from before backwards above the ribs. The typical form presents a long line of bone which lay near the surface of one of the intermuscular septa above the mid-lateral line, and gives off a stout process which was directed parallel to the muscular fibres, and extending forwards and inwards through two segments in front, to be attached by a ligament of some length to the side of a vertebral body. The specimen was presented by J. Stewart, anatomical attendant, and mounted by G. C. Murray.

916. Viscera of Pike, from the same specimen as 915. The stomach and intestines were quite empty. The digestive tube has been divided immediately behind the gills: the stomach is elongated tubular: the intestine, at the pylorus, curves abruptly forwards to the fore end of the cavity, and is thence directed straight back to the vent, gradually narrowing. The pneumatic duct is seen passing from the throat to the fore end of the elongated swimming bladder. The bile duct, about seven inches long, enters the intestine about two inches from the pylorus, and is traced back about seven inches to the fore part of the deep surface of the elongated unlobed liver. At the lower end of the preparation is seen the vent with the genito-urinary opening behind it. Lying over the rectum is seen a urinary bladder about an inch and a half long. On each side of the long air bladder, closely united to it is an elongated hollow ovary, the left one slit

up so as to show the ovuliferous ridge of the lining membrane arranged in transverse strips extending down the whole length. Behind the swimming bladder are seen the remains of the kidneys, the secreting parts of which had become diffuent and have been washed away, while the two ureters and the tubules opening into it are preserved. No pyloric appendages, nor spleen. The digestive tube contained nothing but mucus.

917. Pregnant uterus and vagina of Guinea Pig. The right cornu uteri has contained three embryos, the left cornu contained none. The latest of the three embryos is left attached by its placenta, the amniotic sac unopened. Close to it is the uterine placenta of the embryo preceding it, which together with the remaining and most advanced embryo is put up in preparation 918. The uterus and vagina are opened. The cervix is seen to be massive, depending into the vagina. The urinary bladder and urethra are seen, and a bristle is placed in the orifice of the urethra. The rectum opens into the back of the vulva. Injected.

918. The two other embryos which were contained in the uterus of the preceding preparation, 917. The most advanced embryo is hung uppermost, and is several times as large as the next, which is three times as large as the third embryo, which has been left attached to the uterus in 917. Below it is hung the maternal placenta of the large embryo. A portion of the maternal placenta of the second embryo remains attached to the uterus in 917.

919. Monstrous human embryo of six weeks (?), left attached by its connexions to the walls of its dropsical amniotic sac. A careful examination of the embryo shows that the cephalic part is dwarfed and destroyed, but that there are four limbs. Of the two lower limbs, the left is seen well from the dorsal aspect: the two upper limbs come very close to the lower. The umbilicus is prominent, projecting backwards, and the cord is swollen in part of its extent. Apparently the arrest of development has set in early in the length of the cerebro-spinal axis and its surroundings. The embryo may be considered as a very early acephalus.

920. Base of brain of *Ornithorhynchus paradoxus*. Dry.

921. Eustachian orifices and sacs of the Horse. The cranial extremity of the pharynx is left attached to the base of the skull, and on each side is seen the expanded orifice of a

Eustachian tube with a feather passed through it, the quill lying in the course of the tube to where it is narrowed close to its entrance into the temporal bone, which has been removed. Along nearly its whole course the cartilage of the tube shows free borders, beyond which the mucous membrane is expanded into a huge pouch. The membranous walls of these pouches lie back to back, in contact one with the other, behind the pharynx. That of the right side has been cut short, while the left pouch has been preserved and laid open in its whole length, as it lay between the pharynx and vertebral column. Probably the pouches are of use in preserving pressure on the inside of the membrana tympani when the animal is running, acting thus like the peculiar varieties of apparatus adapting certain osseous fishes to the varying pressure of the sea at different depths. They are well known to veterinary surgeons.

922. Lower limbs and abdominal viscera of a Child born at full-time with sacral spina bifida, ectopia viscerum et vesicæ, and absence of anus and genitalia. The head and thoracic viscera were normal. The skeleton of the thorax and pelvis are separately preserved (prep. 923). The spina bifida forms a large sac depending over the buttocks and laid open. At its pedicle it has burst on the surface, and it was seen on dissection to be a syringocele; the substance of the spinal cord dwindling away, while the pia mater became hypervascular, as may be seen in the preparation. A portion of the higher part of the spinal cord has been left hanging down over the cut integuments to show that there the development has been normal. The ectopia viscerum was completely covered by a thin membranous wall, the lower part of which is preserved above the ectopia vesicæ. The liver and small intestines protruded in the form of a tumour covered in by this membrane. The kidneys, stomach and spleen have been kept as much as possible *in situ*. Between the thighs the skin was uninterrupted by any trace of orifice, and has been sewn together in its original position, while at the sides, about $1\frac{1}{2}$ inches separate one from the other, are two pendulous cutaneous processes which may be considered as half-scrota, since the germ-preparing gland was observed on the left side to be in the groin in a vertical position and to have the rotundity of a testicle.

The front of the lower part of the abdomen is continuous, at the circumference, with the integument of the perinæum and thighs and with the thin membranous wall which covered the protruding viscera. In the middle line of this mucous membrane there is an elongated body standing out, which is the corpora cavernosa of the penis, surmounted apparently by a glans. On each side

of this there is a large convex swelling, and these two had each an opening which proved to be the orifice of a ureter. The umbilical cord is hanging from the right side of the edge of the mucous membrane, but the left hypogastric artery joined the rest of the cord about an inch from the surface of the body, and it has been cut across and remains hanging from the left side of the mucous membrane.

Higher up on the exposed mucous membranes two orifices are seen with a feather in each, and the left one leads upwards into the small intestine, which was loaded with meconium, while the right one leads downwards to the blind extremity of the rectum. The bowel continuous with the right orifice was filled with white loosened epithelium, contrasting with the meconium filling the small intestine. About half an inch above the orifice of the latter, another small orifice is seen, and when the interior of the abdomen is looked at from the right side of the body, which is laid open, there will be seen projecting from opposite this orifice the vermiform appendage well displayed. Therefore, the exposed mucous membrane between the two intestinal orifices, presenting a large area to the outside, depressed in the preparation, but protruded convexly in the untouched condition when the viscera pressed on it from behind, is a burst condition of the cæcum and ascending colon. The remainder of the lower intestine is coiled on itself, and ends in a distended cul-de-sac well displayed in its original position below the right kidney. The pelvis, as shown by the preparation, was imperfect and devoid of viscera. Doubtless the dropsical swelling of the syringocele was the primary malady, and led to the imperfect development of the pelvis. The distension and bursting of the urinary bladder, as well as the absence of anus, would result from the syringocele irritating and thickening the perinæal tissue, and so permanently occluding the lower end of both. The accumulation of meconium had no doubt led to the intestine pressing against the back of the bladder as well as the whole front of the abdomen, and was probably the immediate cause of the ectopia. (Consult *British Medical Journal*, Dec. 26, pp. 1859-1861, where Prof. Arthur Keith refers to a number of papers on ectopia viscerum with a Meckel's diverticulum opening on exposed vesical surface. Obviously the vermiform appendix has been mistaken for a diverticulum. I wrote to Dr. Keith, but got no satisfactory reply.)

(Dry) **923. Skeleton of trunk of the fœtus from which 922 is prepared.** The sacrum much modified by the syringocele causing the spina bifida, and the true pelvis very small, the tip of the coccyx coming forwards so as to close the outlet nearly.

(On stand) **924. *Schistozomus reflexus* (Gurlt), Calf.** The carcase from which this specimen was prepared by Mr. Murray was presented by Dr. Edington. It had unfortunately been much mutilated before coming into our hands. The viscera and lower parts of the limbs were removed and the head was divided. The heart and trachea were dried up, but have been placed as nearly as possible in their original position. This form of monstrosity probably depends either on incomplete closure of the visceral cavity in early embryonic life or on early mesial reopening of the cavity in consequence of dropsical effusion. The head and neck are skeletally normal. The rest of the vertebral column, especially the thoracic part, is flung backwards so that the thoracic portion has the ventral surface of the bodies of vertebræ thrown into a letter **C** convexity. This is accompanied with lateral curvature to the left side. The ribs are flung back in a dorsal direction, exposing the ventral convexity of the column, and thin costal cartilages supporting on each the corresponding halves of the sternum in separate pieces, which bound the sides of the deep dorsal concavity thus formed. The 13 ribs of the right side are all separate one from another, though crowded together; but on the left side the 3rd, 4th, and 5th have their shafts fused together, as are also those of the 7th and 8th, the 9th and 10th, and the 11th and 12th. Unfortunately no vestige is left of the viscera; but the pelvic bones are normal, indicating that there has been considerable development of the pelvic viscera. The skeleton of both anterior and posterior limbs is normal, the scapula being lodged in the deep dorsal concavity.

Specimens 925, 926, and 927 are from a male and a female ornithorhynchus presented by the Hon. John M'Call, M.D., Tasmania, graduate of this University.

(Rectangular jar) **925. Heart and lungs of Ornithorhynchus.** The right lung presents three lobes, viz. an upper or prearterial lobe, a lower lobe corresponding with the middle and lower lobes of the human lung, and an elongated narrow sub-cardial lobe whose bronchial tube is given off immediately prior to that of the upper lobe. The auriculo-ventricular valves are remarkable. The left one, instead of being mitral in shape, forms an elongated membranous funnel most elongated towards the right side; from the middle of its front a very short tendinous connexion comes uniting it to a distinct ventral musculus papillaris, while the dorsal part is more intimately connected with the muscular wall, and cannot be said to have a musculus papillaris. The right auriculo-ventricular valve is something like the oblique muscular projection which forms the valve in birds, but is more expanded,

and at its anterior free edge membranous, and has a long single musculus papillaris attaching its most pendent part to the septum. The pulmonary valve is shown in contact with the aortic valve.

(Rectangular jar) **926. Genito-urinary organs of Male Ornithorhynchus.** Above are seen the kidneys and adrenals. The ureters open below the wide orifice of the urinary bladder. Below the kidneys, on each side, are displayed testis, epididymis and vas deferens. The tunica albuginea of the right testis is laid open, and the right epididymis is partially denuded of the tunica vaginalis. On the left side is more fully displayed the long and wide mesorchium between epididymis and testis. Running down the middle of this is the spermatic artery, which is seen on each side coming off from the aorta. A tendinous band in the edge of the mesorchium corresponds with the part of the human gubernaculum extending between the lower end of the testis and the point where the epididymis falls into the vas deferens, and bringing by its contraction these two parts into close contact. The part of the duct free from mesorchium is the vas deferens and ends close to the opening of the ureter. The wide genito-urinary canal is 2 inches in length and opens by a constricted outlet, through which a glass rod is passed into the cloaca immediately in front of the rectum, as is seen from behind. The cloaca, with glass rod in it, is about an inch long; and into the front of it opens a great preputial pouch. This pouch has been cut into, and part of its wall removed to show the large extremity of the penis which occupies it. The surface of the penis so exposed is roughly tuberculated, as also, less prominently, is the whole wall of the pouch which will be everted when the penis is erected. This exposed part of the penis is bilobate, and on each lobe is sunk a depression, from which can be protruded by eversion an erectile prolongation surmounted by four pointed papillæ. The right depression has been clipped open so as to exhibit a muscular band for retraction, coming from the tip of the body of the penis, which is a strong structure about quarter of an inch in breadth, and approaching two inches in length, springing from about half way forwards on the genito-urinary canal.

At the lower part of the preparation are seen the right and left Cowper's gland. This gland is a compact structure about half an inch long and two-thirds of an inch broad, whose position is in the fold of the groin, and consists of a thick muscular capsule with a flat tendon on the deep surface, and within this is the firm whitish glandular substance. Its duct is an inch or more in length, very small and surrounded with muscular fibres extending to the strong muscular coat of the genito-urinary canal. Its

opening into the canal was not distinctly made out, but seems to be situated near the cloacal extremity of the canal, where were situated several distinct pits. The left gland has been bisected and rests on the bottom of the jar.

927. Genito-urinary organs of Female Ornithorhynchus. Kidneys, ureters and bladder seen in the upper part of the preparation. The oviducts and ovaries at the sides, the genito-urinary sinus and cloaca below. The urinary bladder has a wide neck; below it the oviducts open one on each side, and a little lower down the ureters open at the extremities of two somewhat elongated prominences. The ovary was contained in a wide hood of peritoneum: below this the genito-urinary sinus is prolonged a long way, to where the rectum is seen to open into the less elongated cloaca. Only the posterior half of the cloaca is preserved. It is noticeable that preparation 36 shows that the echidna has a clitoris half an inch long in a distinct preputial sac; but if there is a like development in the ornithorhynchus, as seems most probable, it has been accidentally removed in this specimen.

(In jar, dry) **928. Clavicles of full grown Tigress.**

(In jar, dry) **929. Clavicle (right) of Hyæna.** A small spur projecting from the junction of sterno-mastoid and pectoralis major.

(Under glass bell jar) **930. Fourth lumbar vertebra and minute part of right side of frontal bone of William the Lion.** Presented by Henry Barr, Esq.

(Dry in jar) **931. Altered inter-maxillaries,** each supporting one first incisor tooth, removed by Dr. George Buchanan (afterwards professor of clinical surgery) in 1867. The structure has, as is usual in such cases, projected forwards from the front of the vomer, and been separated by a cleft from the superior maxillary on each side.

932. Left kidney, with secreting substance entirely destroyed by cystic disease. Large cysts occupy the whole space originally occupied by tubular substance.

933. Left kidney, the fellow of 932, showing both medullary and cortical substances increased in amount, capsules closely adherent and thickened. The surface beneath the capsules exhibits a number of little swellings like peas, showing that cystic disease had been threatened in this kidney also, but had not been able to make way.

934. Liver, stomach and spleen of black-tailed Ichneumon, gall-bladder apparently absent. Hepatic lobes remarkable; lobulus Spigelii present behind duodenum, caudate lobe much more pendent, in front of duodenum.

935. Sections of Ox eyes, prepared with acetate of lead.

936. Eye of Crocodile (left). Two specimens, the upper showing the eyelids, particularly the third or membranous eyelid; the lower showing the cornea and the thin cartilaginous sclerotic grooved internally by veins.

937. Eye of Crocodile. Above is seen the back part of the sclerotic with the back part of the choroid thickened and adherent. Outside the choroid a large artery and vein are seen piercing the sclerotic. A small strip of the middle part of the choroid is seen to be thin and delicate till it reaches forward to the ciliary bodies. The lower specimen shows the ciliary bodies to be long and pendulous, apparently in loops or in an inner and outer set, which tear easily separate. Further dissections of a fresh specimen are required to clear up their anatomy.

938. Ox Eye. Lens, capsulæ and ciliary ligament, with forepart of hyaloid membrane and remains of vitreous humour. The lens has kept its transparency. The little processes of the inner margin of the suspensory ligament are seen, and outside this the smooth zone of the suspensory ligament, and still further out its fluted zone, which forms the inner part of the zonule of Zinn with pigment attached to it.

939. Inner canthus of left eye of Ox, front of the eyeball remaining attached by conjunctiva. Shows plica semilunaris forming an imperfect third eyelid, which contains in it the fore end of a thick cartilage, seen at the back of the preparation to narrow into an elongated stem and expand more deeply. The caruncula is small, and has some small hairs on it; and on the margins of the eyelids are the mouths of the canaliculi, each with a feather in it.

940. Tongue, windpipe and lungs of black-tailed Ichneumon. The tongue has a broad patch of large papillæ extending from near the top backwards about a third of its length, each papilla with a swollen base, from the summit of which springs suddenly a long filiform protrusion (seen with aid of a lens); the rest of its dorsum has small filiform papillæ and a few scattered fungiform; and behind these are three circumvallate papillæ, one on each side, and one mesial further back.

The left lung has three lobes distinct, like those of the right human lung. The right has four lobes, the three found in man and a large cardiac lobe. The superior right lobe has its bronchial tube coming off at the commencement of the bronchus, while the other three lobes have their respective bronchial tubes starting from the termination of the bronchus, a good bit further on. The tubes of the three left lobes start close together from the end of the left bronchus, which is longer than the right bronchus.

941. Intestine of black-tailed Ichneumon, from end of duodenum (934) to lower end of rectum. Colon and rectum together short and straight. Caput cæcum coli and cæcum short and without any vermiform appendage. The duodenal end of the small intestine, hanging over the end of the ileum, is of much smaller calibre than the ileum.

942. Tongue of young Elephant, with lower lip attached. The two ducts of Wharton open about an inch and a half asunder, each on a papillary projection. The whole surface of the tongue, when closely looked into, is seen to be covered with closely set small filiform papillæ, and among them are loosely scattered fungiform papillæ, most numerous on the sides and increasing in size from the tip of the tongue backwards. Below these on each side there is a considerable patch of larger smooth elevations, dying further down into scattered fungiform papillæ like those above. And about the middle of the total length of the tongue, where it has been highest in the mouth, the filiform papillæ cease, while further back, in contact with the jar, there is an elongated streak, rough looking, which, looked at with a lens, exhibits a network of furrows, the elevations between which are margined with small papillæ in a remarkable manner.

(Dry in jar) **943. Liver marked by folds of the diaphragm** pressed into it by tight lacing.

944. Brain and cord with surrounding integument from a foetus with open spina bifida and anencephalus. The integument converted into a transparent membrane is torn open and seen on the surface of the dura mater, which forms a single sheet continuous at its edges with the normal part of the skin. The arachnoid of the cord is a complete sac distended in front of the anterior roots of the nerves, and presents in the middle line a white string on its superficial aspect in its whole length. On each side of this, when the specimen is held up against the light, there is seen to be a thin band deeper than the arachnoid, pro-

bably proper cord substance, and immediately outside this what I take for broken portions of posterior roots are seen, while the anterior roots appear to have suffered less and to be continued outwards to perforate the dura mater, and inwards to scatter their strands mostly in a downward direction. The pia mater has been continuous over the brain, whose parts could not be well made out. Possibly the arachnoid has not been continued to the middle line dorsally on the cord, in which case it is pia mater which is seen in that situation. But in any case it is obvious that there is an arachnoid sac with visceral and parietal walls unburst during life, the parietal wall distinct from the dura mater whose bursting caused the spina bifida.

(Dry glycerined in open jar) **945. Solar plexus, kidneys, aorta, vena cava, suprarenals and crura of diaphragm,** all in position. The splanchnic nerves, semilunar ganglia, coeliac, superior and inferior mesenteric plexuses, suprarenal and renal plexuses, also aortic and hypogastric plexus are exhibited.

(On stand) **946. Arius latiscutatus (?)**. Skeleton of specimen sent from Khartoum by Dr. Andrew Balfour.

(On stand) **947. Heterobranchus (Sp.?)** from Khartoum. Skeleton. Specimen sent by Dr. Andrew Balfour. I strongly suspect that Heterobranchus and Synodontis are the same genus; but that Synodontis loses the characteristic loose teeth of the lower lip as it grows larger. See smaller specimen with the loose teeth preserved.

(On card) **948. Coffe fish, Ostracion (Sp.?)**; belongs to the subgenus Aracana. (See Günther, *Brit. Mus. Catalogue.*) (a) Skeleton, (b) Shield.

(Dry in jar) **949. Skin of roof of skull of Acanthias,** injected, dried, and in part denuded of its scales. Shows the pair of openings in the roof of the skull which lead into the internal ears and were the first parts of them to be developed; also the mucous canals and pores of the cephalic part of the mucous sensory system.

950. Fore part of right upper jaw of Horse, dissected so as to show the anterior extremity of the septal cartilage of the nose, which is seen to swell out to an enormous thickness and breadth. The left part of this thickened extremity has been cut away with the left bone, while a remarkable process of cartilage is seen continued from the right edge down through the left incisor foramen (corresponding with the foramen of Stenson

in human anatomy), and projecting forwards to end in a point behind the second incisor tooth, being nearly two inches in length. No communication between the oral and nasal cavities exists, nor any vestige of Jacobson's organ so well developed in ruminants. A considerable artery descends in the mesial foramen (foramen of Scarpa), but neither a naso-palatine nerve nor branch of olfactory could be found beneath the mucous membrane which covered the right side of the septal cartilage.

Note to 950.—This specimen is not complete by itself. The specimen in open jar marked "Mucous membrane of nasal septum of Horse," etc., "see J. C. 950," partly supplements it. But further dissection requires to be made.

951. Displacement of cæcum to the left iliac fossa owing to failure to cross the duodenum. The specimen is from an anencephalic foetus (944) with spina bifida open along the whole back. Liver, stomach, kidneys and pelvic viscera are preserved with their peritoneal connexions. On the left side of the specimen the cæcum is seen hanging down; and the colon can be traced thence to the rectum, which is seen descending behind the opened vagina. Above the colon are the coils of the small intestine. To the right of these coils the duodenum is seen pendent, and with it the remains of a mesentery extending up to near the entrance of the common bile-duct. On the bile-duct there is a good deal of thickening and a mass which is probably pancreatic. The sac of the great omentum may have been distended while as yet the cæcum was not removed from its original site close to the pylorus, and inflammatory thickening to its right has probably diverted it from its normal course, preventing it from crossing the duodenum. This specimen may well be compared with intestines of *Echidna* 953. The spleen is much broken up into lobes with even a few completely separated splenules.

952. Male organs of *Acanthias*, in the inactive condition. The heart, liver and part of stomach are also preserved. The testes lie one on each side of the liver. The massive right and left epididymis run along the whole length of the abdomen, and have been somewhat bent to shorten the specimen. The left one can be followed right up to its commencement internal to the testis. But principally the specimen is intended to show the spermathecal sacs in the ventral fins, which in the sexually active state are filled with semen running into them by a groove on the side of the cloaca. The entrance to the sac is on the inner edge of the clasper, and the neck of the sac passes between phalangeal cartilages to the under side of the fin, and is seen in

the empty state to be compressed between a deep and a superficial flat muscle; and as the clasper is intromittent and retains its position by an arrangement of hooks, the whole sac is subjected to pressure by the invaded oviduct.

953. Abdominal viscera of Echidna, prepared to show the peritoneal relations. The colon has been cut away not far from the rectum, and its cut extremity is seen in the preparation distended with cotton wool below the right lobe of the liver. Thence it may be followed with the small intestine ventral to it, as far as the cæcum, which is seen from the front at the left side below, while the small intestine gathered in a clump has the duodenum ending at the right side, close to the colon, and is at its commencement at the pylorus cut open, as is also the stomach. The stomach has a well-developed cardiac cul-de-sac kept up by one of the threads by which the preparation is hung; and above it there is hung a horny desquamation of mucous membrane, which was found closely crumpled up in the otherwise empty stomach. It is to be noted that the intestines were likewise empty, and I should judge from this circumstance, and from the ovaries having been devoid of visible ova, that the animal when caught was hibernating or just awakened from that state. The gall bladder, cystic duct and hepatic and common bile-ducts are displayed, and the common bile-duct is seen to enlarge into a thicker structure less than half an inch in length before entering the duodenum. This structure has a pancreatic duct opening into it on each side, the pancreas being divided into a right and a left gland, the right one, the larger, lying between duodenum and liver, the left one lying between the liver and the lesser curvature of the stomach, separated from the latter by the pen of a feather placed so as to throw it forward. The spleen of *Echidna* is connected more closely with the end of the colon than the stomach, and is seen in the next preparation (954).

954. Spleen, kidneys, genital organs and rectum of female Echidna, from the same specimen as preparation 953. The spleen is seen attached to the great intestine. The adrenals are placed on the inner margins of the kidneys. The left kidney has been opened in front and shows the great hollow of the pelvis, with apparently little or no medullary substance round it. At the proserial extremity of the vagina three little elevations are seen close together, the mesial one presenting an opening common apparently to the two ureters, while the two lateral elevations appear to be unperforated projections, one lying ventral to each of the openings of the oviducts, and thus calculated to assist in their occlusion under ordinary circumstances so as to prevent

urine being forced into them. The bladder has a constricted neck of its own, between its cavity and the urinary papilla. The special pouch for the clitoris is laid open ventrally so as to display that organ with its two bifurcate extremities. At the back of the preparation the rectum and cloaca are laid open dorsally so as to show the opening of the vagina distended by a piece of glass, and, a quarter of an inch lower down, the opening into the pouch of the clitoris, which is larger, and has the extremity of a bent glass rod passed into it.

955. Tongue, soft palate, larynx and salivary glands of Echidna. The preparation has been made principally to show the remarkable salivary glands. The smaller pair, compact and each coated with a covering of fascia connected by means of a band with the gland of the opposite side, are obviously submaxillary glands, with the ducts of Wharton well developed. The larger pair are also connected one with the other by means of fascia, and on account of their great bulk might pass for parotids; but their ducts open below the tongue, so that they must be considered as sublinguals or glands of Bartholin. The velum palati is so prolonged backwards that it was with difficulty that the epiglottis could be brought into view without injury to the velum. Two large muscles, shown arising from the trunk, are seen to form by their insertion great part of the posterior portion of the tongue, where it carries on it the large patch of horny papillæ.

(Dry in jar) **956. Wired femur of Rabbit.** The wire was placed round the bone when the rabbit was young. The fastening had given way. Nevertheless the new layers of bone have been formed smoothly round it so as to imbed it in the shaft.

(Dry in jar) **957. Lower jaw of Rabbit,** wired on left side. The wire had been passed through the ramus when young and made into a loop fastened behind, but had ulcerated out. The growth of the ramus backwards has been arrested, as is also the absorption at the fore part of the insertion of the masseter. But the absorption at the anterior free edge of the ramus has not been interfered with. The bone has thus remained symmetrical above, but has been arrested in its backward growth below.

956 and 957 were from experiments made in Galway prior to the passing of the Antivivisection Act.

958. Membrane of Descemet of Ox. Two specimens. The upper specimen has been treated first with carbonate of soda and afterwards with nitrate of potash. The cornea has been greatly

swollen by the soda carbonate, and the anterior elastic membrane of Bowman has been partially separated (with, no doubt, the anterior layers of the cornea proper). The membrane of Descemet, partially separated, presents a shrivelled appearance.

The lower specimen shows the cornea in a natural condition, while the membrane of Descemet has been separated in its completeness with the ligamentum pectinatum iridis attached round it and forming a dark ring. The membrane is much thinner and less elastic than in the horse.

959. Cornea of Ox, with anterior and posterior membranes dissected from it. In this specimen, to which various reagents had been applied, and which is slightly stained, the anterior elastic membrane has become more cleanly separated from the main cornea than in 958, while posterior laminæ have remained adherent to the membrane of Descemet.

960. Transparent contents of eye of Ox, two specimens. The upper specimen has been treated with lead acetate, which has made the vitreous humour and the lens densely opaque. A section (equatorial) has been made through it, showing absence of all lamination in the vitreous humour, while the lens has been sufficiently firm to bear section and shows its triradiate division.

The lower specimen has not been treated with lead acetate. The vitreous humour has flattened out; the lens has become broken up, while the anterior layer of the capsule stands out with bold convexity, quite transparent.

961. Lens, iris, fore part of choroid and the ciliary muscle, with ciliary nerves entering it. Ox. Part of the ora serrata has been preserved.

962 and 963. Cirrhosis (more properly sclerosis) of the liver, bisected dorso-ventrally. 962 is the upper half and 963 the lower. They not only show contraction of the whole organ and the hobnailed appearance of the surface, but that the whole substance is throughout divided by connective tissue into separate masses, and these into smaller masses.

964. Trachea, bronchi and lungs of Echidna. Like the ornithorhynchus the echidna has long bronchi with cartilaginous bands truncated at the extremities like those of the trachea. Lungs lobed similarly to those of ornithorhynchus. See 925.

965. Foetal skeleton of third month. Put up in oxalic acid. This was a first experiment with oxalic acid to make the ossifications opaque and the other textures transparent. The

material had been previously badly used and subjected to reagents. *Probably fresh material without dissection will give a good result.* Looked at with a lens by transmitted light, it shows that the bodies of the vertebræ are ossified from a single mesial centre.

966. Fœtal skeleton early in the third month, or fully two months old.

967. Vertebral column and limbs of fœtus of third month.

(Mounted on a needle, pill box and card) **968. Left sphenoidal turbinated bone** from subject about 12 years old. The four centres of ossification—viz., 1. inferior; 2. superior; 3. external; 4. orbital—can all be recognised though welded into one. The orbital surface, which fits in between sphenoid, ethmoid and palatal, has been circumscribed with a black line.

(On card) **969. Vomer of Infant;** the articular surfaces and edges marked on card, as I described them in *Philosophical Transactions*, and in *Human Anatomy*, p. 216.

970. Tail of Acanthias, with blood-vessels injected, partially dissected to show the termination of the vertebral column, the cartilaginous dorsal and hæmal arches, and the dense thatch of horny fin-rays, subcutaneous in origin.

971. Section showing nostrils of Alligator. The nasal fossæ are seen suddenly narrowing in front, then turning upwards, surrounded by muscular fibres.

972. Heart and lungs of Echidna.

(Dry) **973. Lower portion of vertebral column.** Last dorsal, five lumbar vertebræ, sacrum, and, between fifth lumbar and sacrum, an additional intermediate vertebra with transverse processes greatly thickened and articulating with the sacrum in such a way as to produce an additional set of anterior and posterior sacral foramina.

(Dry) **974. Sternum with two sternales brutorum muscles**, both fleshy below and separated by a wide interval, while above they approach one to the other and become tendinous. That of the left side, which is much the larger, has a tendon of attachment to the ridge between manubrium and mesosternum; but its outer half, and the whole of the right muscle, form

tendons which unite in a single attachment on the front of the manubrium; and from that a fibrous strip can be distinctly traced to the sternal tendon of the sterno-mastoid on each side, but particularly on the right side.

(Dry) **975. A left sternalis brutorum muscle**, forming one long distinct band from outside the rectus abdominis up to the manubrium of the sternum, where it is inserted tendinously.

(Dry) **976. Last cervical vertebra**, with a pair of ribs, that of the right side much like the normal costal portion of transverse process; but that of the left side distinct from the vertebra save for a slight osseous union at tubercle, and another at the head.

(Dry) **977. Cervical vertebræ and first costal arch**, the seventh cervical vertebra furnished with a pair of articulating ribs, that of the right side with a shaft more than an inch long, and that of the left side with shaft still longer.

(Dry) **978. Three lower thoracic and two first lumbar vertebræ**, showing a pair of shorter ribs than usual in connexion with the last thoracic vertebra, and the body of that vertebra contracted from above downwards, as if by absorption of a pathological kind.

979. Four specimens of the union of two ribs by a connecting bar of ossification. In one instance one of the ribs so united is bifid at its anterior extremity.

(Dry) **980. Portion of sternum**, with costal cartilages and ends of ribs attached to show a curious arrangement in connexion with fourth rib of right side. In addition to a complete costal cartilage uniting it to the sternum, there is, above that, a cartilage coming off separately from the sternum and ending in a fine point which, however, looks towards the upper angle of the extremity of the rib, and may have been united to it by fibrous tissue.

(Dry) **981. Cervical and two thoracic vertebræ**, articulated to show seventh cervical, which has a pair of ribs, that of the right side osseously united to it, that of the left side articulating with it.

(Dry) **982. A right rib**, apparently the third, widened out and bifid in front. Preserved by Dr. Wm. Allen.

(Dry) **983. A first and second left rib**, united together extensively along their shafts.

(Dry) **984. An articulated set of bones of the left foot,** showing the internal cuneiform represented by two bones. The two together would make up a normal internal cuneiform. The upper or external half reaches back to the scaphoid, but does not articulate with it. Both half-bones articulate with the first metatarsal.

(Dry) **985. Jaws and gill-arches of Skate.** Shows:
 1. A membrane projecting backwards from the upper jaw, above the upper range of teeth. It presents two lateral lobes and a mesial narrower part between, hardened by a series of calcified nodules. This membrane seems not to have hitherto attracted attention, but it is obviously the commencement of the palate of reptiles, birds, and mammals. Both the mammalian palate and this membrane seem beyond question to be the upper lip of the opening made by the stomodæum and the alimentary tube becoming continuous. The lower lip of the opening is, I have always held, visible in man throughout life as the fringe on the lower surface of the tongue, corresponding with or closely connected with the edge of the lemurine under-tongue.

2. The gills are dissected out to show on the right side the cartilaginous rays corresponding with the gill-rays of osseous fishes; and on the left side their sacs are cut into, so as to exhibit the muscular floors and septa—a muscular septum lying between every two successive gill-sacs, in front of the cartilaginous rays.

3. The ventral cartilages are seen with which the gill-arches are connected, viz., a broad cartilage behind, and a pair of elongated narrow slips, all of them on the deep side of the heart and truncus arteriosus, and thus corresponding with laryngeal elements in higher vertebrata.

(Dry on paper tray) **986. Skeleton of Bufo aqua,** limbs and sternum not articulated.

(Dry) **987. Frontal section of face,** cutting anteriorly through eyeballs, maxillary antra (very large), nasal turbinations, etc., and showing posteriorly the Eustachian tube, the sphenoidal sinuses greatly enlarged and no longer communicating with nasal cavity, and, lower down, posterior view of larynx.

(Dry) **988. Section from same subject as preceding specimen,** showing the blind top of the pharynx and sections of Eustachian tubes. The Eustachian tubes are each distended with glass rod.

(Dry) **989. Skeleton of Mole.**

990. Cast of liver of Armadillo.

991. Cast of liver of Hyæna.

992. Cast of liver, duodenum and spleen of Walrus.

993. Cast of lungs of Puma.

994. Cast of intestine of Rhea, showing a pair of long cæca much wider than any of the rest of the intestine in greater part of their length, but tapering toward their blind extremities.

995. Cast of sternum and sternal cartilage of Rhea.

996. Cast of dislocation of Radius backwards.

997. Cast of left Foot with curious hypertrophic growth of second toe.

998. Cast of Knee with transverse fracture of right patella. Presented by Dr. Harry Rutherford.

999. Cast of lower half of Legs and of the Feet of a subject with clubfoot of the right limb, to show the want of growth in the deformed limb as compared with the other.

1000. Fracture of base of Skull. The man quarrelled with his wife ; she called for the police ; he escaped to the flat above, and flung himself out of window. The left petrous was broken right across by the fall, but the loose part has been lost. The body of the sphenoid is fractured transversely, and the left occipito-mastoid and occipito-parietal sutures opened.

